Survey of Research for the Personalized Education Learning Model
and
Applications for the CMA School of Arts & Sciences

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Philosophical Basis for Teaching and Learning Model

Just as curriculum can be defined in a variety of ways, one can approach the evaluation and creation of curriculum through more than one foundational lens: philosophical, historical, psychological, and sociological. All four of these hold importance in influencing curriculum and instruction. However, it is the philosophical foundation which holds the greatest importance because it is through one's philosophical perspectives that the historical, sociological, and psychological foundations are both perceived and applied.

Philosophical Foundation

The philosophical foundation of curriculum helps determine the driving purpose of education, as well as the roles of the various participants. While all foundations propose to set goals of curriculum, philosophy presents the manner of thinking from which those goals are created. One's driving philosophy suggests if education should develop the individual or enforce group norms (Ornstein & Hunkins, pp. 34-36); if it is to enforce group norms, it further defines if that should be the norms of the current set or a move towards changing those norms. Philosophies vary in perception of truth, ranging from absolute to relative, and from moralistic to scientific (34-37). In all of this, one's philosophy defines the role of the teacher, ranging from all-knowing authoritarian to that of a mentor, and the role of the student, ranging from an obedient vacant vessel to an individual worthy of actively engaging in one's own educational process. As we look through the lens of history, we see how philosophies have gained and waned in popularity in society, and how even psychological research is embraced, ignored, or even rejected based on philosophical standings of the time.

Historical Foundation

Exploring the historical foundations of curriculum can promote a sense of freedom and encourage educational reform. Reviewing the history of education allows us to step outside of the here and now, gaining a bigger picture and seeing ourselves within it, realizing that the field of education must remain dynamic in order to be effective. Throughout history, curricular choices have been made out of necessity and to meet the specific needs of society at the time. Also, it is through history that we see how predominant philosophies have defined a society's values, which in turn determined the current purposes of education. Through history, we learn that programs are considered pioneering due to the different philosophies to which others subscribe. In reviewing history, it becomes apparent that this has been the case throughout the centuries. Ideas can change, and a group can break free of faulty suppositions; history shows that what is now isn't necessarily what needs to remain. In history, we see why and how things came to be, how the demographics of a particular committee can have long-reaching impact (Ornstein & Hunkins, 82), and also that some traditions - such as grading (70) - are relatively new concepts after all.

Social Foundation

Society is a reflection of the governing philosophies of the masses, requiring that studying the sociological foundation of curriculum to include consideration of philosophical foundations. Society is dynamic, with the changing popularity of a particular philosophy mirroring factors such as

environmental and economical needs: war or peace time, recession or time of abundance, changing technology, and so on. For example, if a nation is at war, greater emphasis will be placed on sacrificing for the greater good, moralistic principles, and adhering to group norms. During such times, however, there will be dissention based on counter philosophical ideas; the strength of one's philosophical convictions will determine one's perception of the current events, including those impacting education.

Psychological Foundation

The psychological foundation of curriculum and instruction has continued to expand, especially with exponential growth in neuroscience research. The 1990s had been titled the Decade of the Brain (Clemons, 2005), and great strides have been made in the psychology of learning. One might argue that it is the psychological foundations of curriculum which hold the greatest importance because it is here that we understand how students learn; how to increase student motivation and satisfaction; how to achieve educational "success" in its many definitions. However, curriculum decisions and current educational practices in many schools do not yet fully embrace the current research due to the prevailing philosophies held by those in administrative power in the field of education. Again, it is the philosophical foundation that holds the greatest importance because it holds the greatest power. To gain acceptance of research-based educational practices, we must not just show the success of those practices, but also work toward changing the prevailing philosophies that influence the attitudes of society. Also, reaching back to the historical foundation of curriculum study, we should caution ourselves that current research is just that: current. Future psychological research may yield new information. By adopting a guiding philosophy, one does not become married to a particular psychological or sociological foundation of thought, which history reminds us is ever-changing, and one can instead remain fluid in how one's philosophically-based goals are met.

Personalized Education Philosophy

In considering all four foundational lenses noted above, SAS has adopted the Personalized Education Philosophy (see Appendix D: Personalized Education Philosophies and Goals). This philosophy serves as the primary foundation and guide for the development of curriculum and the program as a whole. Decisions ranging from curriculum adoption to implementation of instructional techniques are made in alignment with this philosophy.

Theoretical Basis for Teaching and Learning Model

As noted in the Personalized Education Model, SAS's objectives include facilitating students in finding their own paths to their own dreams; creating life-long learners who are prepared for both the modern world and the future; and empowering individuals to make a positive impact in the world. While no one theory is perfectly aligned, the most useful educational theory for SAS's goals is the Experimentalism realm of the Progressive Vision.

Facilitating students in finding their own paths to their own dreams requires a value of diversity that extends beyond simple demographics and that sees each individual as a unique form of genius. Experimentalism refers to Dewey's views of each "person as a whole being in continuity with the

biological universe' (Tanner & Tanner, 2007, p. 205). Students are shaped by influences that are beyond the reach of the school itself (Coyne, 2007). Each person comes with his or her own talents, interests, and ways of interacting with the world. While many learning styles inventories tend to present information about a person's learning styles in a segmented fashion, it is the unique combination of the various dominant, secondary, and even tertiary preferences that comprise the unique individual, just as combining different ingredients in varying amounts and ways creates a unique recipe for the final product. Although they are perhaps efficient, quantitative measurements are seen as inadequate measures that do not account for such diversity (Tanner, 2007). To go beyond the drilling and regurgitation of a checklist of standards, a school can instead focus on "Big Ideas" that are learned and measured as authentically as possible.

One of the six principles outlined in Coyne (2007), Big Ideas are those important ideas that encompass several little ideas, and they embrace diversity for "there is something for everyone in the realm of big ideas" (p. 11). One example of a big idea is the writing process, something that is taught and used throughout all English courses, including expository, technical, and creative. The writing process is important beyond English courses because it is used whenever writing for any other purpose, whether it is academically or occupationally or even personally. It is a big idea for which students can see value and relevance. Students can still seek their own personal goals, and in ways that best serve them, through a big ideas approach. For students who are proficient or even highly-skilled in a key area, they can progress to higher levels of Bloom's Taxonomy. For students who come with gaps, providing necessary background knowledge and explicit instruction delivered through strategies that match multiple learning styles can provide learning in such a way that accelerates the student's learning to help the student reach certain academic levels "in a timely manner" (Coyne, 2007, p. 12 - 13). This can blend with other scaffolding – the careful sequencing of learning that supports students during the learning process as they aim for mastery (Coyne 2007). At SAS, both the instructor and Personalized Education Coach provide necessary scaffolding, both academically and in helping the student become a self-cognizant learner.

Creating life-long learners who are prepared for both the modern world and the future is another objective of SAS that aligns with the Experimentalist Progressive Vision. It values critical, independent thinking as opposed to the regurgitation of information, and it encourages the avoidance of prescriptive indoctrination. Dewey taught that "the function of education is to unleash human potentials, not to set limitations" (Tanner & Tanner, 2007, p. 206). In order to adequately prepare students for the current dynamic age as well as for whatever the future holds, we must be careful not to limit students to our own current knowledge and perceptions. Instead, we must promote creativity and critical thinking, and strive toward relevance by applying the principle of strategic integration and looking for "naturally occurring relationships" (Coyne, 2007, p. 14). Students must see connections, especially causal, and then be able to synthesize
learning into new ideas.

Culminating with the empowerment of individuals to make a positive impact in the world, Experimentalism again proves to be the best-matching educational theory. While avoiding the

aforementioned indoctrination, the hope is that creating self-cognizant learners capable of recognizing multiple connections through judicious review will lead to world citizens who feel personally valued while also seeing their own unique place and purpose in the world. Perhaps one could argue that this is, in itself, a philosophy that is being promoted in such a way that could be labeled indoctrination; however, even if this is the case, the difference is that there is a "letting go" to allow for an unknown future in hope that autonomous thinking – when combined with the other elements of the theory's application – will lead to social responsibility (Tanner & Tanner 2007). The principle of judicious review requires that important concepts are reviewed frequently, over great spans of time, and across multiple subject areas to show for multiple applications, culminating in a deeper, richer, synthesis level of mastery (Coyne, 2007). For example, Experimentalism supports addressing the use of science from a humanities lens to gain a socially-conscious view of its application, thereby leading to science being used ethically and for the greater good instead of for the purpose of destruction (Tanner & Tanner, 2007). In this way, science and technology could be "used as servants of a humane life and for an enlightened social order" and not for "private power and profit and pubic intimidation (Tanner & Tanner, 2007, p. 207).

SAS is often seen as pioneering, and it does provide an educational option that is somewhat unique in the world. However, seeking the wisdom in philosophies and educational theories that have been established helps provide a stronger foothold, much as the phrase "standing on the shoulders of giants" suggests. SAS calls upon the ideas presented in the Experimentalist Progressive Vision and synthesizes these with new research and modern technology in its quest to provide a cutting edge education program.

Vertical and Horizontal Organization of Curriculum and Instruction

In analyzing the appropriateness of conceptual frameworks for SAS's program, both vertical organization and horizontal organization of curriculum hold value. However, vertical organization of curriculum is handled differently than it might be in most schools, and horizontal organization is increasingly given greater value as SAS continues to refine its program.

Vertical organization of curriculum is more sequential and tends to deal with subjects in isolation. Through the vertical organization of curriculum, different topics within a subject are designated for each grade level (Ornstein & Hunkins, 2009). For example, for the subject area of social studies, most state standards emphasize learning about state history in fourth grade, and U.S. history in fifth grade. State history is often revisited again in either middle or high school, sometimes in isolation and sometimes within the context of another United States history course, which in turn typically occurs in eighth grade and again in high school.

SAS provides coursework covering subjects at the levels typical throughout the nation to allow for the fluid transition in and out of its program; this is especially important for students who are enrolled in SAS part-time or on a temporary basis. Also, SAS partners with several other schools that will need access to curriculum per their own vertically-organized scope and sequence. However, SAS also

allows students to address topics out of this pre-defined order, and this is typically done for full-time students planning on staying with SAS long-term as well as for homeschooling families and multi-age groups covering subject areas in a different sequence. These same groups also enjoy a more horizontal organization of curriculum and instruction.

Horizontal organization of curriculum allows for greater integration across subject areas and the topics within each subject (Ornstein & Hunkins, 2009). Using the social studies example, community, state, United States, and world history can be integrated and taught in context with one another, either sequentially or thematically. In science, Earth, space, life, and physical sciences are integrated logically instead of taught in isolation. Beyond integrating within a subject area, different subjects can be combined to provide an even deeper, enriching learning experience. For example, an environmental science course can pull from all the sciences as well as from social studies and technology.

SAS's philosophy places value on personal growth and responsibility, including valuing the impact one can have in one's community and beyond. To this end, horizontal organization of curriculum is a logical choice because it allows for the nurturing of service-oriented activities as part of the student's learning plan. It also helps students make connections across subjects, which in turn could facilitate communication and cooperation across careers and academic fields of study. The challenge lies in meeting the needs of students and partner programs required to follow a vertical organization in their studies, but SAS's current work in refining its program includes accommodating these needs while building a more integrated and enriching program that fully aligns with its program philosophy. Currently, this is achieved by offering several program options as well as courses that have clear standards-alignment in multiple areas, allowing the student to select transcript encoding that meets his or her needs. An example of the latter would be the Cinema as Literature course, which covers - within a single semester's time - a semester's worth each of literary, visual and performing arts, and social science concepts. Sometimes such courses need to be team-taught to ensure access to Instructors with subject-matter expertise. In these cases, care must be taken with the instructional design and implementation process to ensure that the integration combining the courses remains strong; otherwise, team teaching runs the risk of segmentation or, at best, merely a correlation (Tanner & Tanner, 2007).

Sources Influencing Teaching and Learning

Several sources influence curriculum development and instructional design for any program, and in this SAS is no different. These sources include science, society, moral knowledge, and the learner, with the prioritization of any given one depending on the philosophy of the educational program (Ornstein & Hunkins, 2009). SAS places priority on the learner while acknowledging and incorporating the valuable aspects of the other sources.

Science informs instructional design decisions by providing insight into how students learn, ranging from research in perceptual modalities studied from a neuroscience standpoint to personality disposition types as defined through a psychological lens. The result is several categories of learning styles with

varying terminology and definitions for each (Curry, 1990; Mott, 2005; Tanner & Allen, 2004). Instead of adopting any one theory, SAS encourages continuous staff development to remain cutting edge and to nurture a synthesis of current research.

Society's current and projected needs and priorities also drive curriculum design (Ornstein & Hunkins, 2009). SAS recognizes the need to prepare students for the current world, with an increased emphasis in technology, communication, and globalization, with special attention given to community service and recognizing how a single person can have an impact in the world. Beyond this, however, SAS realizes that students must be prepared for what the future holds, and that even the best of predictions will be limited in accuracy. For this reason, students are encouraged to become critical thinkers, self-cognizant, and to engage in the creative level of Bloom's Taxonomy.

Moral influences on curriculum are not limited to religious texts; they can also include a more general consideration of spirituality for its ability to promote individual growth as well as encourage behavior that benefits the collective whole (Ornstein & Hunkins, 2009). SAS is a secular private school with a clientele comprised of many belief systems including Atheist, Christian, Gnostic, Islamic, Wiccan, and others. While the terms "moral" and "spiritual" are not specifically used, the moral influences are obvious with the emphasis on personal growth and community involvement.

Knowledge is what many people think of first when thinking of curriculum, instruction, and assessment. With the information age, however, curriculum and instructional designers are faced with an overwhelming amount of knowledge that continues to expand (Ornstein & Hunkins, 2009). State standards provide a checklist of knowledge a student should have at each grade level, defining what is deemed most important for inclusion in curriculum development. However, even these lists are often ambitious in coverage yet often lacking depth. When developing course outlines, SAS considers the national standards; several state standards including California, Washington, Oregon, Florida, Utah, Oklahoma, Texas, and others; consultation with subject area experts; and additional knowledge deemed valuable per SAS's philosophy and mission.

"Learner-based curriculum design seeks to empower students and foster their individual uniqueness" (Ornstein & Hunkins, 2009, p. 185). For SAS, the learners truly are the primary source for curriculum development and instructional design. Courses can be tailored to individual needs and interests, and courses can even be created for a specific student. Students come from around the world, from various environments and backgrounds, and with different goals and needs. "No one format is going to meet the needs of all students" (Sheard & Lynch, 2003); SAS provides a variety of formats and remains open to creating new formats as needs arise.

SAS requires the use of several teaching strategies to effectively implement its personalized learning program. As a mastery-based program requiring students to demonstrate 80% or greater mastery, prior-knowledge is given considerable attention. Conspicuous instruction is used to ensure that students learn necessary skills and big ideas. Research shows that explicitly teaching strategies results in greater learning, especially for students who are academically behind (Coyne, Kame'enui, & Carnine, 2007).

Scaffolding is then used to move all students toward greater levels of understanding and independence in their learning. Experiential learning experiences are incorporated into the course design, and further opportunities are encouraged through community involvement and beyond. For example, SAS coordinates educational travel opportunities, where experiential learning can be part of a course. Integration is used to create a deep and rich learning experience by showing cross-curricular connections and providing opportunity for judicious review in a variety of scenarios. Most important of all teaching strategies is to go a step beyond learner-centered instruction to allow for student-driven instruction. In addition to being an instructional strategy, student-driven instruction aligns with the primary purposes outlined in SAS's educational philosophy.

Numerous influences impact the design and development of curriculum, and the value placed on these influences can vary from one program to another, and one decade to another. In considering the various influences and the arguments for and against different ways to organize curriculum, the value of a program's guiding philosophy becomes apparent. Instead of adopting an either/or stance, SAS can consider all that current research and various sources have to offer while remaining focused on the guiding principles and goals that define its program.

Incorporation of Learning Styles

SAS allows instruction to be tailored to individual student learning styles, interests, and goals throughout the entire course of study (see Appendix ## Learning Styles, Interests, and Goals). While other programs will often claim to cover all learning styles, they are usually speaking in terms of covering the different learning styles over the course of many lessons, instead of covering all styles within every single lesson; this is commonly referred to as the hit-and-miss approach. In their review of current research, Diaz and Cartnal (1999) found support for advocating that teachers be aware that differences in learning style preferences exist, and warned that a hit-and-miss approach -- while supposedly efficient -- does not prove effective in meeting student learning needs. In addition to the hit-and-miss approach not working well, neither does an approach that appeals to only the majority. For example, Diaz and Cartnal's study showed a greater preference for independent learning among distance education students than among face-to-face students (1999). However, not all online classes will follow this same pattern, and even if an online class is comprised of more independent learners, the dependent, collaborative learners are of equal importance. Consideration of learning styles in class preparation and delivery methods increases student success by nurturing diversity within the various fields, promoting self-directed learning, and providing for an emotionally positive learning experience impacting student persistence and learning.

Diversity and Equity Issues

In addition to serving students of varying ethnicities, nationalities, religions, and socioeconomic backgrounds, SAS also recognized learning needs and preferences as an important consideration equal or greater than any other demographic. Providing instruction to meet the various learning styles preferences is an equity issue. SAS strives to provide students with equal opportunity through personalization of education.

Some might think that providing the exact same form of education and assessment to all students is fair or equal. However, consider the analogy presented by Stitt-Gohdes (2001). If we gave all of our students new shoes, and the average shoe size is eight, then we might decide that giving all students size-eight shoes would be fair since everyone gets the same thing. However, this "clearly would not – literally – fit their needs" (p. 32). Providing students with what is normally considered to be equal opportunity is not enough, and true equity can be achieved through individualized education according to students' learning styles (Parker, 2004). While some might point to the accepted correlation between IQ and college success as reasoning why some students do better than others (Curry, 1990), Gardner's work in Multiple Intelligences has suggested that other, equally-worthy intelligences exist (1993, 2004). In addition, research has even suggested that "academic ability is not a reliable predictor of who stays and who leaves" (Tanner & Allen, 2004).

Teachers often teach how they themselves were taught, which is often consistent with how they learn best (Clemons, 2005; Rischin, 2002; Burrow, 2002; Orsak, 1990; Tanner & Allen, 2004). Various disciplines have their own sense of culture, including guidelines for behavior, academic expectations, and methods of instruction. For example, a traditional environment might include a predominately lecture-format, rigid scheduling, and learning demonstration through textual means. Teachers are usually students who were successful in their discipline's learning culture (Tanner & Allen, 2004). Students who do not succeed in the learning environment are often labeled "bad students" (Rischin, 2002), and "failure to adapt may result in failure for a student in a chosen program of study" (Fazarro, 2004). These students might be otherwise intellectually capable to participate in the field (Fazarro, 2004; Tanner & Allen, 2004). This can lead to the stagnation of the field. "If we lose students precisely because they learn differently and think differently than those who currently dominate the profession and teach them, we lose a potential source of future creativity in our discipline" (Tanner & Allen, 2004).

SAS teachers recognize the value of instructing students based on each student's individual needs, and they are provided with a variety of curricular resources and tools to tailor a student's educational experience to meet his or her needs. To encourage diversity in a field, teachers are encouraged to teach beyond how they were taught, and beyond how they prefer to learn, to accommodate the range of students' learning styles (Rischin, 2002; Fazarro, 2004; Burrow, 2002; Tanner & Allen, 2004). When designing their courses, Instructors can present lessons in a variety of formats and offer options for demonstration of learning. The results could include the empowerment of underrepresented populations in a field, such as women in science (Davis &
Franklin, 2004).

Promoting Self-Directed Learning

The idea of meeting every learning style need of every student can seem daunting. However, after designing a course that offers flexibility in learning, and helping students become self-aware through a learning styles inventory and mentoring, teachers can "teach students how to teach themselves" (Dunn, 1990, p. 18) and allow them to select the options that best serve their needs (Drennan, Kennedy, & Pisarski, 2005). Not only does this make personalized learning online a more feasible concept, this can

also counter problems such as procrastination as well as assist students who might otherwise be at-risk of failing.

The flexibility afforded in distance education might prove a detriment for students who procrastinate. Students who procrastinate usually do so because they are not confident in their ability to be successful, or they do not see value in the task and have low motivation to complete it, or because of other sources of struggle such as lacking meta-cognitive skills (Wolters, 2003). Students can experience empowerment through the self-awareness of their learning styles, and students can then use strategies for learning and studying that work for them (Dunn, 1990; Tanner & Allen, 2004). When designing a course, one needs to include tools to assist students "in becoming meta-cognitive about their own learning processes and preferences" (Tanner & Allen, 2004).

Both SAS Personalized Education Coaches and Instructors play a role in encouraging students to become self-aware, and the goal of empowering students to become self-directed learners is built into the program at several levels, ranging from live homeroom interactions to course activities requiring practice in developing self-directed learning skills. Some students need more guidance than others, and many need explicit instruction toward becoming self-directed and developing an internal locus of control. In a study by Gerald Nunn (1995), students labeled at-risk took a class on learning strategies, had their learning styles assessed, and had conferences with teachers regarding goals and applying learning strategies. At-risk students who received this intervention had significant gains in their grade-point-average (GPA) and lowered levels of external locus of control. At risk students who did not receive this intervention had decreased GPAs and increased external locus of control. A general education control group showed no significant changes in grades or locus of control. The results of this study suggest that explicit instruction in becoming self-directed, guided by awareness of individual learning styles, can empower students towards self-directed learning behaviors.

Emotion's Impact on Persistence and Learning

SAS students are valued as important individuals, and their unique talents and ways of learning are celebrated. They are nurtured by teachers and support staff toward mastering course competencies while also gaining personal confidence (see Appendix E: Tiered Educational Support). SAS teachers and staff understand the importance of emotion and its impact on student learning. Many aspects of a person's learning style are biological (Fazarro, 2004; Burrow, 2002; Davis & Franklin, 2004; Dunn, 1990; Tanner & Allen, 2004), and brain research has shown a connection between emotion and a student's ability to learn. Students learn best in environments that are emotionally supportive and free of excessive stress (Clemons, 2005; Zull, 2004). The affirmation and empowerment students can receive through acknowledgement and accommodation of their learning styles can impact their level of productivity, motivation, and sense of self worth (Burrow, 2002; Zull, 2004).

A student experiencing the frustration of being introduced to a new learning concept through his or her non-dominant modality may withdraw from learning before having the chance to experience learning the same concept through a preferred modality. Recent instructional design research has supported sequencing instruction according to each student's dominant and subdominant learning styles to

promote greater student satisfaction and learning gains (Kahn, 2007; Krichen, 2007). To this end, SAS's program model allows for the tailoring of instruction to allow for the level of flexibility required to create a personalized education experience for each student.

Curricular and Instructional Options to Accommodate Learning Styles

To accommodate student learning styles, interest, goals, and other needs, a variety of curricular and instructional options are made available (see Appendix F: Course and Curriculum Options). Instruction can include a combination of asynchronous instruction and live interaction with an instruction in an online classroom equipped with a whiteboard, webcam, audio, file sharing, text-based chat, desktop sharing, breakout rooms, and more. Learning can also include experiential activities and the incorporation of meaningful, authentic experiences.

In order to provide personalized yet rigorous instruction, a variety of learning objects must be made available. Learning objects are units of learning and are preferably granular, self-contained and reusable (Poupa & Forte, 2003). The Learning Technology Standards Committee of the IEEE defines a learning object as "any entity, digital or non-digital, that may be used for learning, education, or training" (IEEE, 2002). Under this definition, examples of learning objects can include videos, interactive learning games, instructional text, audio files, and any other object used for instruction. Personalized Education Group (PEG) courses, created for SAS, are designed in a modular fashion, allowing for the objects to be gathered, repurposed, and/or created for the specific learning goals of each module. Learning objects can be autonomous of the context, with context built around the objects as part of the class structure. Learning objects can be selected or created to match perceptual modalities, allowing students to engage in instruction initially through their dominant mode of learning, as well as through their secondary and tertiary modes, in order of dominance. A sampling of the types of learning objects currently employed by SAS is listed below:

- Animated lessons of concepts
- Animated movies
- Audio wave files
- Flash movies/lectures
- Hands-on manipulatives and activities
- Interactives adjustable maps and graphs
- Interactive software such as for graphic arts
- Learning manage system tools such as quizzes
- Online textbooks, many with audio
- Online literature, many with audio
- PDFs with text, graphics, and/or activities
- Print-based books
- Printable handouts and activities
- Recordings of live lectures by Instructors
- Streaming video
- Streaming webcam
- Virtual labs
- Worksheets

Academic Integrity

With distance education schools, academic integrity is a concern because of its relationship to the integrity of the program itself and to the quality control of the mastery-based level of learning expected from all students. The challenge is nurturing the ability to personalize education through curriculum and instruction while also maintaining academic integrity in the online and/or distance education format.

SAS's two types of teachers, Personalized Education Coaches and Instructors, both play a role in balancing the potentially conflicting issues of personalizing education and academic integrity.

SAS implements the Personalized Learning Model as a key component of its program. The EF and instructor together work with the student to ensure that a program is uniquely tailored to learning styles and other needs, leading towards mastery-level learning of the material and the development of the student as a confident, self-driven learner. Instead of seeing the teachers as the authority figures who hold the absolute truth, students are encouraged to develop relativistic thinking; according to C. J. Arvidson, this level of cognitive development can reduce the likelihood of cheating (2004). Arvidson's study goes on to explain that students with positive self-concepts are less likely to cheat.

Personalized Education Coaches play a vital role in ensuring that each student is provided a program personalized to his or her needs. Personalized Education Coaches evaluate learning styles inventories and diagnostic skills assessments as key tools in tailoring a program to the students preferred method of learning and academic skills and gaps. The EF also takes into account any other important considerations such as family life; for example, many SAS students travel often, including out of the country, presenting specific considerations with regards to needing very mobile curriculum options. The EF mentors and guides the student, moving the student towards being an independent learner; this can transition the student's program from being student-centered to student-driven. However, while the student is encouraged to become self-cognizant and actively involved in his or her education, the EF is there to advocate for the student while the student continues to build his or her confidence.

Instructors are subject areas experts, and they provide the quality control of the program, ensuring that all key competencies of a subject area are being met. They are able to help tailor a student's program at the class-level, including providing alternate curriculum options and adjustments. The goal is to provide a means for the student to successfully master the competencies of the course, building a bridge that accommodates individual learner needs and preferences while ensuring program rigor.

Academic integrity is a topic of which both site-based and distance education schools are concerned. Students who cheat are most likely not learning at all, let alone at the mastery level required by SAS. Beyond the consequences at the individual level, a program's own integrity can be threatened if safeguards are not put into place to counter the potential for cheating. Many schools opt to require proctored examinations as part of their program. However, students can often still find proctors with whom they are able to cheat, so this is not a perfect solution. Also, it provides additional challenges for SAS students as many will travel to locations where obtaining proctors proves difficult, and their travels often make scheduling for a proctor a hardship. Beyond this, most types of exams that can be proctored lie outside the realm of the authentic learning and assessment that many students have as part of their personalized learning program. Academic integrity needs to be maintained through other means, and again both the Personalized Education Coaches and the Instructors play vital roles.

Personalized Education Coaches promote a positive attitude and a sense that success can be possible through the Personalized Learning Model. They make sure that students are fully supported in their

tools and resources, including ensuring that students are using the various resources available to them. They also connect with students at least once per week during homeroom – a live online classroom where groups of the EF's students meet for updates, to check-in, and to ask questions and receive help. The EF's can also have one-on-one meetings with students using the live classroom or through other means such as the telephone or online instant messaging. In addition to offering support, Personalized Education Coaches are "checking pulse" of each student, asking questions about what he or she is learning, determining if a student seems to be struggling, reviewing student progress in individual classes, and maintaining a certain level of vigilance. This attention and watchful eye creates an environment that is less conducive to cheating.

Instructors also promote the same positive attitude while also using tools and strategies to safeguard against cheating. Instructors tailor instruction for optimal student success by aligning instruction to student learning styles and needs as well as to student interests. They work with students to adjust classes and encourage students to take an active role in the design of their program. Students engaging in authentic learning experiences, such as problem-based learning projects without set answers, tend to have higher levels of intrinsic motivation (Sungur & Tekkaya, 2006). When a student struggles or scores below a mastery level, the instructor will work with the student, allowing him or her to then reassess or modify the original assignment submission. Instructors also use tools such as Safe-Assign to check for plagiarism in written assignments. Possibly the most important safeguard, however, is instructor-student communication. Instructors use live office hours or other means to discuss topics with students, asking questions and guiding students in their learning. Instructors are able to discern a student's level of understanding of a topic through these direct interactions. Students are aware that such interactions will happen, and that plagiarism checkers will be used, which could be a deterrent for some. In addition, they are very well-supported in their learning so that most realize that they do not need to cheat in order to obtain high scores.

SAS's two types of teachers, Personalized Education Coaches and Instructors, play mostly complementary roles in the issues of personalization and academic integrity, with some overlap in their roles for supporting students. Their cooperation helps ensure that academic integrity is maintained through means that support instead of undermine the Personalized Education Philosophy.

Maintaining Program Rigor

While flexibility and personalization of learning are the defining component's of SAS's program model, care has been taken to maintain program rigor. Every course offered, K-12, has a course outline. The course outline includes the course title, grade level(s), duration, a brief description, and an outline of course competencies. The course competencies are the learning goals for the course, and they have been created based on national and several state standards as well as in consultation with subject area experts. Under each competency are subtopics, providing specifics regarding topics that could be taught for each competency.

Courses are created to align to the SAS course outlines. When a student wishes to have part of a course tailored or altered, the competencies covered need to be equivalent. When creating a customized course of instruction for a student, a learning plan is devised that shows explicit alignment to the course competencies (see Appendix G: Course Plan and Course Outline).

Although a course plan form has been used, the competencies have now been placed into Report Writer (RW), a program developed by School Pathways for the purpose of documenting personalized learning plans and to facilitate maintaining program rigor. Student courses, curriculum selected for each, and specific assignments are documented through RW. Grades and evaluations are also entered through RW, streamlining the process.

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