

LEADERSHIP VISION & E-LEARNING PLAN

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Introduction

Our education system is shifting in a positive and exciting direction creating a bright future and equipping our future-ready students with skills to be able to compete in the global world. Today's school classrooms are being outfitted with emerging technologies to meet the richness and real-time accessibility of information which is continuously growing at a surprising rate (Stein & Graham, 2014). Classrooms are experiencing an evolutionary process which necessitates the continuous use of the internet and facilitates inspiring practices to enhance and enrich everyday student activities. With this initiative of immediate internet access; a clear revelation in the reconfiguring of the brick and mortar school system prompts electrifying energy and invigorating classroom instructional design methodology. According to Clark & Mayer (2016), digital and non-digital environments for instruction open up many opportunities for immersion into and along with differentiation of course content. E-learning courses embark on the "how" and "what" of the specific subject matter. (Clark & Mayer, 2016, p. 10). The understanding and learning process includes information about the content and the delivery or instructional method derived from the subject matter. Both, e-learning and blended learning drive the student learning process in harmony. Even though the e-learning structure is online, and blended learning is a combination of online and onsite, both are valuable to the instructional design to address the learning needs of the 21st-century learner.

Vision

The future of educational technology revolves around the implementation of a blended learning model in a classroom. The expansion of digital technologies into the education system is growing more abundant as the teaching staff is utilizing these tools. Clark & Meyer (2016) describes blended learning as "smart instructional solution...variety of delivery context...include

text readings, on-the-job projects, asynchronous online pre-work assignments, an in-person classroom session followed by virtual classroom discussions, and/or discussion boards” (p. 14).

Our students are growing up understanding and using digital tools from their early childhood years (Bers, 2012). Education systems should take note and advantage of what students are familiar with and use the devices as guidance toward the learning process in the classroom.

As a technology teacher at the intermediate school level, I strongly feel with the availability of these emerging technologies interconnected to a blended learning model is a perfect environment to introduce robotics as part of STEM. My vision is to initiate a fifth-grade blended learning robotics education unit at the intermediate school where I teach technology. My goal is to increase the student engagement in STEM (Science, Technology, Engineering, and Mathematics). Through the implementation of a robotics unit employing the flipped classroom blended learning model. This unit will take place in the first cycle as a pilot program. The pilot program will be in a formative assessment period throughout the first cycle with ongoing feedback from instructor and students (Brown & Green, 2016). The adjustments will be made accordingly for the second cycle. Therefore, each cycle revised as needed. I believe this is a work-in-progress, never concrete. This blended learning model infuses the digital know-how of the learner and a well-rounded curriculum with its’ foundation based in STEM. In our competing global world, opportunities for our 21st-century learners are abundant in robotics which correlates with the worldwide initiatives directed at STEM in the educational field.

Blended learning involves a shift in learning as an educator and student touching various on the Bloom's Taxonomy and student-centered learning. Also sustains the best practices approach in a systematic, engaging and implementing of content in a user-friendly format. Blended learning uses the modern emerging technology (internet) along with a connected

lifestyle to deliver benefits for students, teachers, and administration including: (a) increased access and convenience; (b) improved learning; and (c) decreased (or more flexible) costs (Stein & Graham, 2014, p. 14).

With the use of digital tools, the direction turns toward what is the best method to implement, involve, and sustain the interest of the student learner. Blended learning instructional design offers a direction and a diverse selection of models to solve the needs of a transitioning classroom. The models are (a) rotation; (b) flex; (c) a la carte; and (d) enriched virtual (Horn & Staker, 2015, pp. 55-57). The rotation model comprises of student rotation to stations in which at list one station is online learning. This model consists of four kinds of rotations: (a) station rotation; (b) lab rotation; (c) flipped classroom; and (d) individual rotation (Horn & Staker, 2015, p. 55). The flex model constitutes the majority of learning online and with various offline assignments (Horn & Staker, 2015, p. 56). The a la carte model meets entirely online, for both the learner and instructor (Horn & Staker, 2015, p. 57). The enriched virtual model is where the students meet face-to-face with the instructor and then continues the learning online (Horn & Staker, 2015, p. 57). Each model focuses on the specific functionality of the instruction, but also can be adaptable in mixing and matching of variables depending on the curriculum.

Instruction in traditional classrooms is being revamped, restructured, and refocused to embrace the blended learning model to personalize student learning. Horton (2012) states that designing and building these modules with the use of evolving digital technologies create and support learning objectives and experiences. Teachers can go beyond the simple digital facelift and create transformative blends using this instructional design process to adjust the course lessons. Horn & Staker (2015) indicates the blended learning design allows students to take ownership of their learning by involving “place, path, and/or pace” choice within the curriculum

unit (p. 34). The Internet provides a sense of immediacy and instantaneous results in which today's students or "digital natives" (Prensky, 2001) are expecting in all areas of life.

Brown & Green (2016) describes a format for the "open-ended learning environment" as incorporating the blended learning instruction design in "helping the learner articulate a personalized problem to be solved or explored" (p.119). This design allows a correlation with the cognitive and context connections where a learner has options encouraging exploration for each one. Through the theoretical lens of blended learning, the differentiated activities energize the learner increasing involvement, interactions, and comprehending new knowledge, skill, and insight. This blended learning dynamic between the 21st-century learner and school environment helps the learner understand the context and share within the technological environment. In adherence to the NMC Horizon Report: 2015 K-12 Edition, blended learning is being embraced and on the rise in 21st-century classrooms. The report indicates these initiatives are gaining ground which complements the teaching based on the flexibility and interactive proceeding for learners to maximize their technology skills.

Blended learning models pave the way for innovations to improve on the traditional teaching systems and integration by using technology as a tool for teachers and students. For teachers, like myself, adapting and redesigning my instructional methods enable flexibility and transformation of various types of learning experiences (Brown & Green, 2016 & Stein & Graham, 2014). There are many benefits to the students participating in a blended learning unit. Some of the student benefits are engagement, authentic learning activities, collaboration, accountability, self-direction, and self-motivation (Stein & Graham, 2014).

A strategic e-learning plan will be developed to implement a flipped classroom blended learning model for a fifth-grade technology class. Horton (2012) maintains specific criteria that

can make or break the success of an e-learning design which involves the “design” and “decision” process (p. 2). With this, the e-learning design for the blended learning unit will be directed at the specific learning experiences, activities and components to ensure the understanding of the learning concepts are nurtured and completed by an online and onsite classroom environment.

E-Learning Plan

The initial development of this exciting and innovative flipped classroom blended learning model is to conduct a needs analysis which will identify the specific need(s) in the district. According to Horton (2012), for a useful e-learning element in a blended learning module, the beginning stage consists of a solid foundation including “selecting, organizing, and specifying the learning experience” creates the necessary connection for just enough and not overpowering the teaching of content to students (Horton, 2012, p. 3). The needs analysis will gather data to determine if there is a problem or related need, if a change is warranted, where the solution or change to take place, and is instruction necessary and bring about desired results (Brown & Green 2016, p. 56). This analysis will help in determining the audience, goals and objectives and assessments (Brown & Green, 2016, p. 46). Data from a learner analysis will guide the structure and substantiate the need for this specialized curriculum.

The ADDIE (Analyze, Design, Develop, Implement, and Evaluate) instructional design model is an essential structural model with one minor change in e-learning design. According to Horton (2012), implement stage is molded together with the develop stage because they both take place at the same time (p. 65). This innovative model involves step by step details focusing on specific instructional goals, learner analysis and objectives, modifications, and assessments (Brown & Green, 2016, p. 12). These elements combine into an ongoing process which will help

in the design of this blended learning unit by focusing on the feedback from the students. Change is inevitable and starts with the needs analysis, instructional design and continues through to leadership and implementation of this model. The transition can be quite tricky and a challenge (Northouse, 2013).

My leadership role, as a team leader, requires an introduction of an instructional design concept relatively new to the district. This specific instruction will be a change in teaching methods and a challenge requiring substantial justification and evidence. This leadership style involves three skills approach as described by Northouse (2013), human, technical, and conceptual (pp. 44-46). The ability to work with people, knowledge, and concepts or ideas are essential characteristics of a team leader. I plan to use these skills to identify and reach out to the stakeholders (administration, colleagues, parents, and students) in sharing the value of this unit. As a team leader my responsibility is on “action taking and diagnosis” (Northouse, 2013, p. 305). I can appreciate the collaboration of other colleagues and absorb the professional responses as part of this program.

The flipped classroom blended learning approach creates an exciting and innovating design of the course. The “flipped” classroom gives the students the freedom to focus onsite with the application and engagement of the hands-on activities such as building a robot which requires individual responses and interactions. Then at their leisure, at home, go online to watch the video that goes over the onsite activity. This online connection used for lessons, but also for blogs, and discussions. For instance, a discussion on certain measurements for distance calculations to have the robot move a certain distance. Another aspect of the online application is the “technician.” Each student will take a turn as the “technician or engineer designer” for the week. If students encounter problems during the onsite activities, there will be a technician corner to ask questions

and instruction is given online. This activity is essential as it is student-driven. The online instructional lessons are to introduce the specific concepts which will be transformed, enrich, and reinforce the onsite activities. The online activities invoke student ownership and responsibility for their learning. The use of kits in class adds flexibility and encourages students to individualize their knowledge through hands-on activities.

Flipped classroom blended learning model offers an opportunity for students to access information before class and incentive to come to class prepared; for teachers, this provides an instrument to assess student understanding and increases the focus on higher level cognitive activities with them in class, hands-on activities (Brame, 2018). The onsite classroom is the place for active learning, inquiry and problem-based learning with the infusion of independent responsibility. The essence of the flipped classroom blended learning robotics unit displays significant social value with a one-time monetary cost for the district. This success of this course will help improve the educational process and provide students with the tools for innovation, expanding their horizons, by not “layering or cramming technology on top of existing models” (Horn & Staker, 2015, p.109).

The flipped classroom blended learning core objectives are the transition of students from passive learning and to where the learner engages in a collaborative, hands-on activity, peer learning, and problem-based learning. The role of the teacher changes to that of a facilitator, sometimes engaging and participating with the students. This use of technology enriches and fosters the process and promotes 21st-century skills.

Funding Proposal

Educational kits are an absolute necessity for students to use in the classroom. To implement this blended learning module correctly and accurately; the district needs to purchase

the specialized kits. These kits allow interactive, hands-on activities related not only to robotics but science, math, engineering, computational thinking, innovation, collaboration, problem-solving, engagement, critical thinking, etc. These best practices and learned skills are directly connected to everyday life and easily transferable to the next level of self-assessment concerning mutual respect and rapport. Incorporating these practices and additional skills including innovation and discovery are all critical aspects of the learning which assemble during this comprehensive robotics blended learning unit. According to Bers (2012), educational robotics is the “new generation of learning manipulatives” (p. 29). These digital manipulatives include software for coding and programming applications which engage and expand the dynamic concepts and solutions to the real-world and real-time venues.

Incorporating robotics curriculum, as part of the fifth-grade computer cycle will provide students with stimulating and interactive activities which extend their knowledge resulting in new curiosity to explore STEM. The kits are the substantial expense for this blended course. To best sustain a flipped blended classroom on robotics, I recommend 16 LEGO EV3 education kits and 16 VEX classroom starter kits, including an instructor kit from each vendor. The initial cost of the kits offset by the flexibility and reuse of the equipment year after year. Besides, the district receives a license for the specialized software. Each module comes with its own set of tutorials. Student tutorials reinforce the curriculum concepts. The students are actively involved with hands-on activities which further their learning and interests in the STEM field.

This upcoming school year, I will receive new Chromebooks and iPads. There is not a cost for instructor training, and all training videos are part of the educational kit package. As for the storage and classroom space issue, no additional cost incurred by the district. Workbenches have been constructed and installed by some of my former students, as part of their community

service and senior project. There are additional expenses which include expendables, peripherals, resources (handbooks), and expansion kits. These items funded on an as-needed basis through the school petty cash and the PTO.

Funding is continuously an area in which, public school budgets are minimal and maintain strict guidelines. These guidelines are quite competitive and require full justification with approvals by the principal, administration, and the board. My first choice for funding my vision is through the yearly request as a new technology budgeted line item for the classroom. Hopefully, the board will recognize the importance and fully fund this 21st-century robotics education blended learning course. If not, I know of additional resources which can be commissioned to obtain funding. The following resources can for additional funding are: (a) the district's Education Foundation; (b) DonorsChoose website (<https://www.donorschoose.org/>); (c) The Innovative Technology Experiences for Students and Teachers (ITEST) program, <https://www.nsf.gov/funding/aboutfunding.jsp>; (d) National Science Foundation (<https://www.nsf.gov/funding/azindex.jsp>); and (e) LEGO FIRST (For Inspiration & Recognition of Science & Technology), <https://www.firstinspires.org/>.

I believe with this direction that the blended learning module will drive students to seek out additional activities in STEM. I also think, given the opportunity and tools, every student can acquire their 21st-century skillset by being exposed to and engaging in hands-on applications, teamwork, problem-solving, real-world applications, and student involvement in the online assignments/discussion through the direction of blended learning. These digital learners are our future workforce for the global community.

Conclusion

In conclusion, with the flipped classroom blended learning design, teachers can go beyond the simple digital facelift and create transformative blends by instructional redesign process of the lessons in the course. Implementation of my vision will provide many opportunities through synchronous and asynchronous learning for students to explore robotics and maintain an interest in STEM. This blended learning course provides an opportunity for teachers to mix the best onsite and online elements to create new a learning environment for the students (Stein & Graham, 2014). Providing students with added items such as hands-on activities, blogs, websites, discussions, and videos as this blended robotics unit taps into their “digital native” schema and allows for authentic assessments (Prensky, 2001). The data from the assessments will validate the overall expenses involved in the purchase of the various educational kits and accompanying materials, along with the need for this specific method of instruction.

Along with the assessments, the success of my vision will focus on the learner’s ability to grasp the concepts and turnkey the skills into all areas of their lifestyle, not only in school but their social activities outside of school. Horton (2012) stated that “E-learning is not just a change of technology. It is part of a redefinition of how we as a species transmit knowledge, skills, and values to younger generations of workers and students” (p. 583). The measurements in place, for this course, are based on the communication and applications of the hands-on activities complemented by discussions and provide crucial opportunities either individually or as a team to explore and solve real-world problems. A key question to be answered by the learner, to determine the success or failure is: Based on what you know, can you access the value or importance of ... (subject or content)? As with my beliefs and vision, “we teach so that learners

can apply what they learn, not merely accumulate knowledge. People apply learning in real-world situations” (Horton, 2012, p. 24).

With my vision comes a different revelation to our district. The blended learning course that I am proposing is the first for this school. With the success of this flipped classroom blended learning module, I envision, and other teachers will want to implement the restructuring of their existing course(s) within the district. Dirksen (2016) stated that learning, online, e-learning, and in class, involves students to have “interactive experience” (p. 52). The experience of being part of this energizing method of relaying information in this new learning design is evidence students are capable of creating, understanding, analyzing, and justifying content when exposed in a different process of instruction. Their valuable feedback from this course will be setting a precedent for the future STEM and robotics curriculum in a blended learning classroom and a measurement of the success of my vision.

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