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DreamIt: Flipping Creative Solutions

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DreamIt Description

Within my teaching profession, I find myself regularly facing the same problems of practice. Some of the problems I face are lack of creativity, lack of critical thinking, insufficient problem solving skills, students appear unmotivated, students do not connect with the subject matter, students are failing to complete assignments, and students lack information literacy; they do not know how to conduct research and determine if sources are reliable.

I would like to empower my students to creatively solve problems, increase their information literacy, and foster a fun and educational experience in my classroom. In my DreamIt proposal, I would like to present some possible solutions through the incorporation of flipping my classroom with an emphasis on creative problem solving. I would also like to incorporate technology in the form of Chromebooks and USB drives (being will be supplemental to my overall plan).

In an attempt to solve my problems of practice, I envision replacing "homework" with lecture by flipping my classroom. While in school, I want to foster a hands-on, creative, problem-solving, learning environment. My plan, which will transpire throughout this paper, will address how the problems I experience in the classroom can be resolved.

The Transformation I Wish To See

We live in a world that is constantly providing us with dilemmas and problems to solve. I believe one of the most important skills to acquire in school is the ability to think outside the box and problem solve; having this skill will not only benefit students in the classroom and on their standardized tests, but it will also help them become successful in life. Within my classroom, I would like students to gain a creative mind-set, become self-reliant while improving their

metacognition (an awareness and understanding of one's own thinking process), and improve their skill to think critically.

As an educator, I need to be able to judge whether or not these skills are being acquired. I plan to judge the success of my plan through observations, discussions with students, and through assessments (standardized tests and formal & informal assessments in the classroom). My hope is that over time students will begin to ask me less questions while providing more unique and thought provoking answers to questions/problems.

My teaching plan will focus on three facets of understanding; explanation, interpretation, and application. Students will research, translate, and interpret data often realizing there are many possible interpretations (*interpretation*). Students will create/design a product in class (related to a problem they are trying to solve), test it, analyze it, revise it, and provide a solution to a given problem (*application*). Students will determine a solution to a given problem and justify why their solution is pertinent (*explanation*).

The success of my students will be based on various assessments. Students will be assessed formally and informally. They will be observed in the classroom and they will be given formative and summative assessments. When completing projects, they will be given a rubric with required criteria. Rubrics will be based on the High School Content Expectations, their ability to work in a group (or individually if required), and using ingenuity when solving problems.

The Total PACKage

Context

To see my plan unfold, it would be helpful to describe the context in which I am working. I am a high school science teacher at Lakewood High School in Lake Odessa, MI. Lake Odessa is a small farming community. Students, for the most part, are very good-natured. They are a fairly tight-knit religious community. Lakewood has a high percentage of students with reduced or free lunches, in addition to a large amount with special needs (IEP or 504 plans).

At the High School, I primarily teach Earth Science, Chemistry, and Biology. My class sizes can range from 20 to 35 students, most often averaging close to 30. I teach to a wide range of abilities; in each class I usually have a handful of students with an IEP or 504 in addition to students who excel academically. Many of my chemistry classes are co-taught with a special education teacher.

Affordances and constraints. Lakewood is fairly fortunate to have the technology they currently have; some of the technologies I currently use at the high school are Apple desktops, Apple Macbooks, digital Flip cameras, a projector, and a visual presenter (Elmo). The school also has wifi with fairly good bandwidth. Unfortunately with budget cuts being made every year, we have lost our technical support and expert that used to work in the media center. If a student wants to gain technological skill, they must ask their teacher (who hopefully can address their issues), they must look it up on their own, or they must consult a peer.

At home, most students have a computer, tablet, or smartphone with wifi, however, the low-income families usually have neither. Although Lakewood has fairly modern technologies, most staff are unaware of how to fully use the technology to aid in their instruction and the few

students lacking technology can make implementing new ideas difficult; teaching methods at Lakewood are fairly "old school", usually based on the format of lecture and in-class questions. The teachers could use more professional development regarding pedagogical uses of technology in the classroom. When presenting new ideas to leaders, there is often a barrier; most often the barrier is focusing on the problems rather than the solutions. Feeling a lack of support and team atmosphere, most teachers keep to themselves and are "lone wolves" in their profession and lack teamwork.

Content

Considering the problems of practice I face, I would like students to meet the state standards while becoming more self-reliant and gaining a creative, problem-solving mind-set. To accomplish this goal, I would like to set-up a classroom with the following structure:

First, I would like students to watch lectures at home. I would like to incorporate my background in performing arts into my teaching by creating instructional videos that infuse the application of real-world experience into the science they are learning. Students are more likely to retain knowledge and obtain understanding if new content is related to their experiences (Girod, 2001). In addition, I would like to incorporate "theatrics" into my teaching. I believe that if I can capture their interest, they will take the time to watch my instructional videos and ideally gain knowledge. A study completed by Henriksen & Mishra (2013) revealed that National Teacher of the Year winners applied their creative background and hobbies into their teaching. Although it is important to gain the interest and attention of my students, it is obviously important to focus on content knowledge in my lectures/videos. Willingham (2009) discusses how understanding relies on background knowledge; students cannot apply critical thinking if

they do not have background knowledge of terms, etc. The instructional videos will provide

necessary knowledge that will later supplement understanding within the classroom.

The second phase of my plan will be to give the students a content-related problem to

solve at the beginning of class. Students will come to class with a problem on the board and they

will be asked to provide a creative solution. For example, I may have the students use the

terminology they have learned about rocks and the rock cycle (and a provided rubric) to

creatively demonstrate (using a story, visuals, etc.) how an igneous rock could turn into a

sedimentary rock, how this sedimentary rock could later become metamorphic, and how this

metamorphic rock could turn into an igneous rock. I would later ask them if it is possible for

these rocks to change from any rock type to any other rock type and support their answer.

Technology

The third component of my plan will be to use the resources they have to solve a

problem; this will be their in-class assignment. Ideally students will have technology as a

resource. To adequately implement this three-step plan, I will need access to Chromebooks and

other technologies, like flip cameras, USB drives, and the projector (to allow students to present

their work). At Lakewood High School, teachers have access to projectors and flip cameras,

however, I would need a grant for Chromebooks (and USB drives). Without USB drives,

students who do not have internet would be unable to watch a the lectures at home. A USB drive

will allow me to save the lectures so they could access them from any computer, with or without

internet. The Chromebooks would be necessary for the implementation of their creative

productions. Without Chromebooks, I would not be able to put this plan into effect on a daily

basis. Not only does a classroom set of Chromebooks allow me to execute this plan regularly, but

it provides an abundance of options for producing creative work. Students can use a variety of web-based applications to make a creative product that demonstrates their understanding of content. For example, a student could use Inklewriter to create a choose your own adventure story on the rock cycle. Students could use ToonDoo to create a comic that demonstrates their understanding of the same topic, or they could make a video in PowToons. All fostering learning through autonomy, creative freedom, and deep play (Mishra, P. et al., 2010). The premise of my plan is to allow students to creatively solve a problem through the use of Chromebooks and other technologies.

Petagogy

Not only can the Chromebooks be used for their endless creative options, Chromebooks will allow students to complete research on their topic and collaborate via Google Drive. Students will acquire valuable skills in researching, metacognition, and collaboration through the use of these devices. Using Chromebooks will not be the sole purpose of my plan, but rather aid learners in completing their goal (i.e. solving a given problem); this is based on the TPACK model proposed by Mishra & Koehler. Whenever a teacher applies technology in the classroom, it is important to keep pedagogy and content knowledge as the central focus. They must always come first while technology is used to aid in understanding.

By flipping my classroom and having the central focus be "creative solutions" while in class, I believe I will best meet the needs of my students while applying the TPACK model. I will aim to structure my lectures based on the foundation proposed in "Teaching That Sticks" (Heath, C. & Heath, D., 2007). The Premise of the "Teaching That Sticks" philosophy is that teaching should be *Simple*, have a component that is *Unexpected*, should be *Concrete*, *Credible*,

Emotional, and involve a *Story*. Notice the starting letters of these six components spells

"succes," (albeit incorrectly spelled). Furthermore, the content/lecture should involve a story that

is interesting and have an element of surprise, while being concrete and relate to students based

on their experience.

In connection with the SAMR model, which stands for *Substitution, Augmentation,*

Modification, and Redefinition, my DreamIt proposal will apply three of the four components of

the model (excluding *Redefinition* in some cases), possibly all four in many instances.

Technology will be used to substitute hand-written documentation to typed, and in-class lecture

will be converted to out-of-class lecture via video (*Substitution)*. Documents will be saved on the

cloud, spell-check will be constantly used, and transferring and using images and documents will

be easier (*Augmentation*). Students will easily be able to work collaboratively in class or at home

(*Modification*). Lastly, students will create unique products using the technology and can access

virtually anything by the web. They also have the potential to contact and collaborate with

people around the world if they choose (*Redefinition)*.

Evaluation

I plan to measure the impact of my 3-step structure by informal interviews, observations,

and by assessment. I will informally ask students if and how they have benefitted from the

layout. I will also ask if using the Chromebooks (and apps) has helped them increase their

understanding on content while increasing their critical thinking skills and the capacity to

creatively solve problems. I will help to scaffolded students, yet aim to empower them with the

skill to solve their own problems; to determine if this goal is being reached, I will observe their

progress in the classroom (See what they are struggling with, make sure they are using appropriate methods of research and obtaining information literacy, and determine if they are using their resources and working collaboratively). Hopefully their assessments will also demonstrate growth. The ACT, in particular, tests how well students can read graphs and interpret data, which often demonstrates their ability to critically think about the questions being asked. Increased scores on the science portion of the ACT will hopefully demonstrate growth in problem solving skills.

Assessments

Informal. During the implementation of my DreamIt plan, it will be critical to assess student learning and growth in order to determine if students are benefiting from the structure. Students will be assessed both informally and formally. During the informal assessments, students will be observed in the classroom working in groups. They will be critiqued on their participation and attempt towards achieving a creative solution. Students will also be evaluated on their contribution to the group. Lastly, they will be assessed on individual growth; perhaps this portion of the grade will manifest in the form of a student/teacher discussion where both parties come to an agreement on a score.

Formal. Formal assessments will be in the form of summative and formative assessments. Summative assessments should have questions/problems that apply the incorporation of knowledge, understanding (answers that apply critical thinking should incorporate terminology in addition to creative problem solving), and creativity. Formative assessments will typically occur using a rubric given to students derived from the theme

"creative solutions." Their score on the rubric will be based on some of the following questions/ideas: Did the student complete accurate research? Did the student accomplish all of the requirements? Did the student solve the problem (and answer questions) by thinking creatively or "outside the box"?, was the student able to support or back their "solution," etc. The High School Content Expectations will be incorporated in the "problems" given to the students at the beginning of class, they will be included on the rubric, and in most other assessments.

The Big Idea

Considering I face a lack of creativity, motivation, and critical thinking in the classroom, I hope to resolve these issues through the incorporation of problem-solving with a focus on creativity (from the students, and me, the teacher). If students appear excited to go home and watch my ridiculous science lectures that relate to their experiences which have an interesting story, I have scored! If students come to class pumped and excited to unleash their creativity, knowledge, and understanding, I have hit the jackpot! Gauging and maintaining the interests of my students will be my primary focus. If they are not interested, I might as well raise the white flag because knowledge and understanding manifests through motivation; motivation occurs through excitement; and excitement unfolds through creativity.

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Connection to MAET Theory

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My DreamIt concept hits on many topics and research we have discussed in class. Willingham (2009) states, "assignments that demand creativity may also be motivating." This idea is a foundational component of my overall concept. In our MAET class, we discussed how

most students are individual and lie on the end (the Long Tail). Applying creative projects that have the potential to be unique to the individual will cater to most students whom lie on the Long Tail.

Our society has the unfair belief that the youth is technologically savvy; we have unjustly coined them as "digital natives." Boyd (2014) addresses that there is no such thing as a digital native; just because students have been exposed to technology does not mean they know how to properly use it. Students must learn how to find information, evaluate the information and its sources, and reconcile conflicting information (Levstik, L.S. & Barton, K.C., 1997). When giving students a problem to solve in my classroom, they will complete research using the chromebooks, they will face conflicting information, and over time learn to solve this issue while gaining problem-solving skills.

Lev Vygotsky, a psychologist, believed cognitive development resulted from the internalization of language. When students are exposed to new terms (via video lecture) and later use and internalize those terms during class (solving problems through creative outlets), they will gain knowledge and understanding. Willingham (2009) also addresses how background knowledge is crucial for understanding. Using a combination of flipped lecture while applying creative solutions to a problem given in class will aid in merging knowledge and understanding.

Although all of these theories we have learned in the MAET program have played a role in the construction of my plan, my DreamIt concept is primarily based on the flipped classroom and TPACK model (Mishra, P. & Koehler, M.) while incorporating ideas from "Learning from Creative Teachers" (Henriksen, D. & Mishra, P., 2013), "Teaching That Sticks" (Heath, C. & Heath, D., 2007), and "Teaching for Aesthetic Understanding" (Girod, M., 2001). In summary,

applying creativity and play in the classroom allows students to feel a sense of autonomy and freedom of expression. "Effective teaching is the same as creative teaching" (Henriksen, D. & Mishra, P., 2013). Applying my creative background and hobbies while incorporating real life experiences will encourage learning and understanding. Lastly, my teaching will spell "succes"; it will be *Simple*, *Unexpected*, *Concrete*, *Credible*, *Emotional*, and involve a *Story*.

References

Boyd, D. (2014). *It's Complicated.* New Haven, CT: Yale University Press.

Girod, M., Rau, C., & Schepige, A. (2003). Appreciating the beauty of science ideas: Teaching

       for aesthetic understanding. *Science education*, *87*(4), 574-587.

Heath, C., & Heath, D. (2007). Teaching that sticks. Retrieved from

       http://delaney.typepad.com/files/teachingthatsticks.pdf

Henriksen, D., & Mishra, P. (2013). Learning from creative teachers. *Educational*

       Leadership, *70*(5).

Levstik, L. S., & Barton, K. C. (1997). The theory behind disciplined inquiry. In *Doing*

       History: Investigating with children in elementary and middle schools (pp. 9-16).

       Mahwah, New Jersey: Lawrence Erlbaum Associates.

Mishra, P., Koehler, M. J., & Henriksen, D. (2010). The 7 trans-disciplinary habits of mind:

       Extending the TPACK framework towards 21st Century Learning. *Educational*

       Technology.

Shulman, L. S. (1999). Taking learning seriously. *Change: The Magazine of Higher Learning*,

       31(4), 10-17.

Willingham, D. (2009). *Why don't students like school?*. San Francisco, CA: Jossey Bass.