LEARNING TO MOTIVATE

Industrial and Interaction Design
Thesis Research Book
Written by Wynanda Armas
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This book embodies the research part of this undergraduate thesis in Industrial and Interaction Design at Syracuse University. This book was completed as part of the curriculum for IND 573 with Professor Denise Heckman in the fall of 2013 and spring of 2014.
LEARNING TO MOTIVATE
FORWARD

College was not what I expected in so many ways. Everyone told me it would be a culture shock going to the East Coast and all the books, flyers and pamphlets warned of the dangers of having so much freedom. While I did find people were meaner and much more judgmental than I ever expected, I found that I had much less freedom in college than I did in high school. In high school, my single mother trusted me to take care of myself, to always do my best, and to check in when I could. I had my own car, cell phone, computer, and no curfew. My mom completely trusted me and I never did anything to compromise that. I attended the best, private high school in San Francisco with almost half of every graduating class going to the top colleges in the country, i.e. Ivy League universities or the West Coast equivalents like Stanford University, Cal, UCLA, and USC. My school was a pressure cooker and doing your best was not really an option as much as it was required. It was encouraged by everyone, fostered by the teachers, and expected by peers. Being smart was socially cool. The most popular kids in school were the wittiest, took the hardest classes, held leadership positions in various clubs, were on multiple sports teams and usually played an instrument. I thought college would be similar, but on a larger scale.

I thought the classes would be hard, the curriculum rigorous, and the professor’s expectations high. Although this was true of one of my classes, it was not true of most. Many students did not show up to class regularly, did the bare minimum to get by and very few people ever participated in class. At first I was just excited because I stood out and did very well. But after some time and once I began to have group projects, it began to frustrate me. I did not comprehend how people could not care about their classes, about learning, or about getting the most out of their education. In a large
university, everyone has different educational backgrounds and therefore different motivators, but figuring out what motivated some students to learn seemed impossible. I was frustrated, but who was I to judge? We were all relatively successful. We all got into college and were in one of the highest ranking programs for our major in the country. For the students who didn't care about grades, going to class, or learning, I questioned why they were even in college, wasting $60,000 a year. When I did ask people, most were honest and gave a variety of answers including:

“When am I ever going to use any of this stuff?”
“Grades don't matter in the real world.”
“You're only in college for four years, so you have to live it up.”
“I'm just here to get the degree.”
“I'll work once I get a job.”

In high school everyone was motivated to not only do their best and get good grades, but also to learn. I have very severe learning differences and was never top of my class, but it taught me a valuable lesson, that nothing comes easy, and I have to work for everything. You won't always be the best, but you should always strive to be your best. I found these concepts to be foreign to so many people in college and it made me question what role motivation has in success. Will simply going through the motions, going to college and graduating lead to success? But is graduating, being successful? The simple answer is yes. When you graduate you are assumed to have accumulated a certain amount of knowledge, warranting a degree. Simply having a degree does not guarantee success after college, but nor does getting good grades in college. So who will be successful in the future? Will those who work hard, try to learn as much as possible and get the most out of their education be successful? Will those who are attending college to simply get a degree be successful? Does it matter the means if the end is the same, graduating from a university? Does being motivated to learn and work hard even matter?
INTRODUCTION

In this book I explain and synthesize my findings throughout the research part of my thesis. Having always been interested in peoples’ attitudes towards learning, I focused my research on motivation in education.

I first discuss motivation and ‘demotivation.’ There are two types of motivation: intrinsic motivation propelled by internal desires, which is extremely powerful especially in the long term and extrinsic motivation fuelled by external rewards, which is effective and powerful in the short term. Everyone is born intrinsically motivated but this can be conditioned out of us by extrinsic motivation. I found that there are incredible benefits of intrinsic motivation: creativity, mental health, and success. Despite the known benefits of intrinsic motivation and perils of extras at motivation, extrinsic motivation is continually used, devaluing intrinsic motivation in all kinds of settings, including our schools.

I then go into depth about the benefits of intrinsic motivation: creativity, mental health, and success and include case studies to illustrate each.

Lastly, I cover the role of motivation in the different contexts of the work place, parenting and school.
MOTIVATION | DEMOTIVATION
Note: “Demotivation” is not a word in the English language, however there is no antonym to motivation. For the purpose of this book I will use “demotivation,” “demotivate,” and “demotivator” to denote the opposite of motivation, motivate, and motivator.
WHAT IS MOTIVATION?

Most simply, motivation is the driving force that causes an action or desire. As defined by Merriam-Webster's Dictionary, Motivation is “the act or process of giving someone a reason for doing something; the act or process of motivating someone; the condition of being eager to act or work; the condition of being motivated; a force or influence that causes someone to do something.”

In other words, motivation is the inner drive to behave or act in a way. It is the purpose or reason why someone does a certain action. There are two main types of motivation: extrinsic motivation and intrinsic motivation. Extrinsic motivation and intrinsic motivation are both more complex as they are fueled by desires. In both types, a person must be able to see a relationship between their behavior and their desired outcome, in order to be motivated. If a person cannot see the linkage between these behavior-outcome relationships, and therefore do not believe that their behavior will lead to something they desire, whether the fault of a system, organization or another individual, that person will not be motivated. “The desired outcomes can be intrinsic satisfaction, or they can be extrinsic rewards, but people have to believe that some outcomes will accrue from their behavior or they will not be motivated to behave.”
Motivation

Intrinsic Motivation
- Autonomy
- Purpose
- Grit

Extrinsic Motivation
- Incentive
- Recognition
- Comparison
Motivation

Intrinsic Motivation

Autonomy
Purpose
Grit

Extrinsic Motivation

Incentive
Recognition
Comparison
EXTRINSIC MOTIVATION

Extrinsic motivation is fueled by external desires. With extrinsic motivation, a person’s behavior is dependent upon the rewards an activity will deliver. Incentive, comparison, and recognition all drive extrinsic motivation as different types of rewards. Rewards can be physical, such as money or intangible such as a grade. Extrinsic motivation also can depend upon the threat of punishment following misbehavior. Extrinsic motivation proves very effective in achieving short-term results but less and less so over time.
EXTRINSIC MOTIVATION

Incentives serve as great external motivators and can come in the form of bonuses, prizes, and even grades. Anything can become an incentive if it becomes a reward for a desired behavior. Bonuses are a common example of an incentive in a corporate environment, especially in sales. If someone sells X amount, they will earn B amount in commission. And if you sell Y amount, they will earn C amount in commission. This creates a system of motivation contingent on the rewards, where a person is consistently motivated to reach the next reward level. However, if the next reward level seems unattainable, not worth the extra work, or does not exist at all, motivation diminishes.

Extrinsic motivation can manifest in the form of competition as it encourages the performer to win over others, to beat others, not simply to enjoy the intrinsic rewards of the activity. Comparison and competition is a great motivator, especially in sports. Comparison and competition promote motivation dependent on constant comparison and the behavior and the opponent. Should the competition seem unbeatable or the opposite, too easy, motivation to continue to work or continue to improve will fade.

Recognition for desired behavior can be a very powerful motivator. For example, children in school often desire recognition from the teacher for good behavior or for receiving a good grade on an assignment. Recognition can be an award, position, or acknowledgment for a desired behavior. Awards or positions can function similar to bonuses; instead of earning a bonus for the desired behavior, a person might earn an award or public recognition for their behavior, such as employee of the month. For example, if someone does X better than their peers, they will be awarded a title such as employee of the month. And if they do Y, they will earn the title of employee of the quarter. This creates a system of motivation contingent on the rewards. However, if the recognition seems unattainable, not worth it, or does not exist at all, motivation diminishes.
INTRINSIC MOTIVATION

Intrinsic motivation is fueled by internal factors. These internal drivers, such as wishes, desires, and goals, impel a direction of behavior; the behavior depends on the inherent satisfaction that an activity brings. Interest or an inherent satisfaction an activity brings ignites intrinsic motivation. Intrinsic motivation is driven by a curiosity and interest in the task itself, and exists within an individual rather than relying upon a desire for reward or any other external pressures.

All humans inherently begin intrinsically motivated beings as are we are naturally curious and want to learn about the world around us, but this internal motivation to learn can and often is conditioned out of us. The benefits of intrinsic motivation are immense especially in comparison to external motivation. While intrinsic motivation does not outperform extrinsic motivation in the short term, intrinsic motivation always outperforms extrinsic motivation in the long run. A desire for competence or mastery and ensuing grit, coupled with a desire for autonomy, propelled by curiosity and a purpose, is the ultimate recipe for lasting intrinsic motivation.
Motivation

Intrinsic Motivation

Autonomy
Purpose
Grit

Extrinsic Motivation

Incentive
Recognition
Comparison
AUTONOMY AND INTRINSIC MOTIVATION

Autonomy can be a very powerful motivator as it also reinforces itself as a motivator. That is, both the freedom to choose to do something and actually doing it serve as two motivators. When a child makes their own choice, they “achieve satisfaction from both the act of choosing and from the [activity]... Since the activity is generating the motivation, it is mostly self-sustaining for as long as the child wants to continue the activity.” Therefore, when learning, “children learn more, remember longer, and are more interested in pursuing a topic... when they are provided opportunities to find answers to their questions.” The autonomy to pursue the answers on their own or in their own way creates lasting motivation with a valuable learning process.

Curiosity is potentially the most natural and powerful of all motivators. All humans, especially children, are inherently curious and want to learn. “Curiosity is not simply engagement per se but a way of questioning things that requires unscripted interactions and an ability to follow a line of inquiry into unknown places, to see where it goes, and to see what happens.” Curiosity and purpose are similar but a purpose is often greater than one person. “The most deeply motivated people - most productive and satisfied hitch their desires to a cause larger than themselves,” a purpose. Having a purpose and being curious are the most sustainable motivation systems that can last lifetimes.

A desire for competence and eventual mastery is crucial in intrinsic motivation as the driving a perpetual interest and aspiration to continue. This desire for mastery must be able to sustain despite challenges or setbacks, taking the form of work ethic and grit. “A work ethic is more than putting one’s nose to the grindstone. It is the belief that we are personally accountable and responsible for what we accomplish (or fail to) coupled with the concept that what we are accomplishing is worthwhile.” Grit is closely related and can be described as the determination and persistence to keep your nose to the grindstone even when it is difficult. This creates a sustainable motivation system that lasts as long a person’s desire for mastery or competence. “Having the self-confidence to know that one can solve a problem motivates the learner to accept other new and challenging situations, which in turn lead to greater learning.”
WHAT IS DEMOTIVATION?

Demotivation is a result of too many obstacles preventing motivation. Fear is the number one cause of all demotivation. This fear becomes an obstacle and excuse to give up or change directions. This fear can manifest in many forms but regardless of the form, it has a major effect, diminishing the motivation to learn sometimes to the extent of causing an opposite reaction, demotivation. The first major demotivator is the fear of failure and the second is the fear of rejection. Both are factors that begin in early childhood and carry into adult life. Failure and rejection both can be part of how one values themself or how others value them valuation so there is a higher risk, a greater fear, as failure and rejection are more lasting. For children, rejection from social groups is a very real fear and determines and shapes a lot of children’s behavior in groups. For example, most kids feel the need to fit in by wearing the “right” brands and acting “cool.”

Fear of criticism and punishment are also very common but have a less permanent effect on someone’s life and often play upon frustration and embarrassment. Though criticism and punishment are less permanent, that doesn’t make their impact less demotivating.
Demotivation

Fear

- Rejection
- Failure
- Criticism
- Punishment
Both fear and motivation have clear and distinctly different impacts on brain function through brain activity and the chemicals it releases.

Fear causes a biological reaction in our brain. The reptilian part of our brain, which sits in the center of our brain, it shuts down the rest of our brain when we sense threats; it shuts down the prefrontal cortex, the part that allows us to learn and to think cognitively. Your body releases an excess of adrenalin, which is your short-term stress hormone, and cortisol, which tends to be more of a long-term stress hormone. This combination of chemical release and limited brain function is beneficial evolutionarily because survival instincts (no thinking) and physical strength (fight or flight response) take over allowing you to survive. However, now days what we fear and what the brain interprets as threats, are punishment and examinations. As an education researcher, Sugata Mitra says “We take our children, we make them shut their brains down, and then we say, ‘perform.’”

The brain reacts positively to both intrinsic and extrinsic motivation, yet to different degrees. When a desire compels an action, there is a personal gain in performing the action. Whenever we experience personal gain, our brain releases the chemical serotonin, which is the neurotransmitter responsible for feeling happy. Motivation engages our frontal lobe, which is responsible for our attention, short-term memory tasks, planning, and motivation.

The neurological difference between when we are intrinsically motivated versus extrinsically motivated, is that less serotonin is released when we feel we “have to” do something or have little choice in the matter. The left-brain is rational and the right brain is emotional so when we find something challenging, stimulating and interesting, the communication between both sides of our brain intensifies and strengthens. If the left brain registers the activity as not fun but required and the right brain registers the activity as a personal investment, the communication between the left and right brain is not strong and reduces your ability to think critically or creatively. Neurologically, intrinsic motivation is positively reinforced, consistently.
When children are frustrated or scared they don't learn.
INTRINSIC ➔ EXTRINSIC
Everyone starts out intrinsically motivated.
BENEFITS OF INTRINSIC MOTIVATION

While both extrinsic motivation and intrinsic motivation are useful and effective in different situations, it is clear that intrinsic motivation is better as it is stronger and self-sustaining. Though the comparison of power and longevity proves intrinsic motivation superior to extrinsic motivation, a comparison of the weaknesses and benefits of both, will highlight how and why intrinsic motivation is greater.

The difficulty with intrinsic motivation is that it cannot be taught or imposed upon anyone, “you cannot motivate other people, but you can remove the obstacles that stop them from motivating themselves.” Another detriment of intrinsic motivation is that while it is inherent in all people, it is susceptible to fade if not encouraged. Lastly, because intrinsic motivation cannot be imposed upon someone, determining or guiding the direction of the intrinsic motivation can seem slow, inefficient or futile.

In comparison, extrinsic motivation seems much more efficient especially in the short term. However, extrinsic motivation has “deadly flaws.” First and foremost, extrinsic motivation extinguishes intrinsic motivation to do the same task or achieve the same goal. Because extrinsic motivation is contingent upon rewards, performance will decline over time, as the person is consistently motivated to reach the next reward level as soon as possible. This also crushes creativity, as speed to attain the next reward is valued over the quality or ingenuity of work. With the new or next reward level constantly, extrinsic motivation fosters short-term thinking, becomes addictive and as a result crowds out good behavior, encouraging cheating, shortcuts, and unethical behavior.

Despite all the negatives, extrinsic motivation is still very effective especially at achieving short-term goals. However after comparing the downsides of both types of motivation, the intangible enduring benefits of true intrinsic motivation begin to surface. As previously established, autonomy toward mastery with purpose, is the ideal combination for maximum motivation, fostering intrinsic motivation. These three elements that support intrinsic motivation also play a role in facilitating and sustaining the lasting benefits of intrinsic motivation. Living a life driven by intrinsic motivation proves to lead to better mental health, higher levels of creativity and greater success than on driven by extrinsic motivation. Creativity, mental health, and success, are all life long benefits of intrinsic motivation.
CREATIVITY

Intrinsic motivation is crucial to creativity as extrinsic motivation inhibits creativity. In practice, creativity is often a byproduct of intrinsic motivation that has many benefits. “For artists, scientists, inventors, schoolchildren, and the rest of us, intrinsic motivation – the drive to do something because it is interesting, challenging, and absorbing – is essential for high levels of creativity. But the “if-then” motivators that are the staple of most business often stifle, rather than stir, creative thinking.” Intrinsic motivation, propelled by curiosity, driven by autonomy and pursued with grit, incites creativity. Grit alone requires and provokes creative problem solving.

Creativity is not limited to unique or original thought but also includes creative problem solving. “Author and creativity expert Ernie Zelinski says, ‘Creativity is the joy of not knowing it all. The joy of not knowing it all refers to the realization that we seldom if ever have all the answers; we always have the ability to generate more solutions to just about any problem. Being creative is being able to see or imagine a great deal of opportunity in life’s problems. Creativity is having options.’” Creative problem solving is applicable to, and useful everyday and in all fields study not just exclusively creative fields. Creativity is “seeing more solution than problems. And the greater the quantity of thoughts, the greater the chance for learning something new” and as a result “creativity can improve a person’s quality of life.” “If Thomas Edison had valued the status quo over creativity, would he have invented the light bulb?” Creativity is a consequence of intrinsic motivation that ends up propelling intrinsic motivation to intensify.

“Creativity is intelligence having fun. People admire intelligence, and they are always attracted to fun.”
Candle and Tacks

For a quick test of problem solving prowess, few exercises are more useful than the “candle problem.” Devised by psychologist Karl Duncker in the 1930’s, the candle problem is used in a wide variety of experiments in behavioral science. Follow along and see how you do. You sit at a table next to a wooden wall and the experimenter gives you the materials shown below: a candle, some tacks, and a book of matches.

Your job is to attach the candle to the wall so that the wax doesn’t drip on the table. Think for a moment about how you’d solve the problem. Many people begin by trying to tack the candle to the wall. But that doesn’t work. Some light a match, melt the side of the candle, and try to adhere it to the wall. That doesn’t work either. But after five or ten minutes, most people stumble onto the solution, which you can see below.

The key is to overcome what’s called “functional fixedness.” You look at the box and see only one function-as a container for the tacks. But by thinking afresh, you eventually see that the box can have another function- as a platform for the candle. To reprise language from the previous chapter, the solution isn’t algorithm (following a set path) but heuristic (breaking from the path to discover a novel strategy).

What happens when you give people a conceptual challenge like this and offer them rewards for speedy solutions? Sam Glucksberg, a psychologist now at Princeton University, tested this a few decades ago by timing how quickly two groups of participants solved the candle problem. He told the first group that he was timing their work merely to establish norms for how long it typically took someone to complete this sort of puzzle.
To the second group he offered incentives. If a participant's time was among the fastest 25 percent of all the people being tested, that participant would receive $5. If the participants' time was the fastest of all, the reward would be $20. Adjusted for inflation, those are decent sums of money for a few minutes of effort—a nice motivator.

How much faster did the incentivized group come up with a solution? On average, it took them nearly three and a half minutes longer. Yes, three and a half minutes longer. (Whenever I’ve relayed these results to a group of business people, the reaction is almost always a loud, pained, involuntary gasp.) In direct contravention to the core tenets of Motivation 2.0, an incentive designed to clarify thinking and sharpen creativity ended up clouding thinking and dulling creativity. Why? Rewards, by their very nature, narrow our focus. That’s helpful when there’s a clear path to a solution. They help us stare ahead and race faster. But “if-then” motivators are terrible for challenges like the candle problem. As this experiment shows, the rewards narrowed people’s focus and blinkered the wide view that might have allowed them to see new uses for old objects.
One of Lepper and Greene’s early studies (which they carried out with a third colleague, Robert Nisbett) has become a classic in the field among the most cited articles in the motivation literature. The three researchers watched a classroom of preschoolers for several days and identified the children who chose to spend their “free play” time drawing. Then they fashioned an experiment to test the effect of rewarding an activity these children clearly enjoyed.

The researchers divided the children into three groups. The first was the “expected-award” group. They showed each of these children a “Good Player” certificate adorned with a blue ribbon and featuring the child’s name- and asked if the child wanted to draw in order to receive the award. The second group was the “unexpected-award” group. Researchers asked these children simply if they wanted to draw. If they decided to, when the session ended, the researchers handed each child one of the “Good Player” certificates. The third group was the “no-award” group. Researchers asked these children if they wanted to draw, but neither promised them a certificate at the beginning nor gave them one at the end.

Two weeks later, back at the classroom, teachers set out paper and markers during the preschool’s free play period while the researchers secretly observed the students. Children previously in the “unexpected reward” and “no award” groups drew just as much, and with the same relish, as they had before the experiment. But children in the first group- the ones who’d expected and then received an award- showed much less interest and spent much less time drawing. The Sawyer Effect had taken hold. Even two weeks later, those alluring prizes-so common in classrooms and cubicles- had turned play into work.
To be clear, it wasn’t necessarily the rewards themselves that dampened the children’s interest. Remember: when children didn’t expect a reward, receiving one had little impact on their intrinsic motivation. Only contingent rewards— if you do this, then you’ll get that— had a negative effect. Why? “If-then” rewards require people to forfeit some of their autonomy. Like the gentlemen driving carriages for money instead of fun, they’re no longer fully controlling their lives. And that can spring a hole in the bottom of their motivational bucket, draining an activity of its enjoyment.

Lepper and Greene replicated these results in several subsequent experimentations with children. As time went on, other researchers found similar results with adults. Over and over again, they discovered that extrinsic rewards—in particular, contingent, expected, “if-then” rewards— snuffed out the third drive.

As one leading behavioral science textbook puts it, “People use rewards expecting to gain the benefit of increasing another person’s motivation and behavior, but in so doing, they often incur the unintentional and hidden cost of undermining that person’s intrinsic motivation towards the activity.”

This is one of the most robust findings in social science—and also one of the most ignored. Despite the work of a few skilled and passionate popularizers— in particular, Alfie Kohn, whose prescient 1993 book, Punished by Rewards, lays out a devastating indictment of extrinsic incentives— we persist in trying to motivated people this way.
NOTES
MENTAL HEALTH

One of the greatest and most long lasting benefits of intrinsic motivation is great mental well-being. The Self-Determination Theory (SDT) evolved from the motivation revolution that started in University of Rochester by Edward Deci and Richard Ryan found that “people oriented toward autonomy and intrinsic motivation have higher self-esteem, better interpersonal relationships, greater general well-being, than those who are extrinsically motivated.” In contrast, when people are extrinsically motivated, their aspirations are superficial validations: money, fame, beauty, etc. Those who are extrinsically motivated show greater publics self-consciousness and consequently have poorer psychological health.

Grit, a key element of intrinsic motivation, is persistence of work ethic. Enduring work ethic, grit, is not only crucial to intrinsic motivation but also fundamental for children to develop before they become adults. Dr. George Valliant, director of the renowned Harvard Study of Adult Development, has reported that the single biggest predictor of adult mental health was “the capacity to work learned in childhood.” The study confirms the importance of the development of grit especially in relation to work ethic as that forms a person’s ‘capacity to work.’

Many professionals, including Carol Dweck Ph.D., which she explains in her book Mindset, consider intrinsic motivation to be a mindset referred to as a “growth mindset” that can be conditioned out but can also be relearned. A person’s mindset is determined by their values and has a major impact on a person’s mental health. A growth mindset, one that achieves intrinsic motivation, values learning and the learning process which inevitably involves challenges over simply appearing smart, strong work ethic, and determination when faced with adversity. To someone with a fixed mindset, inclined to extrinsic motivation, exerting effort and facing difficulty make them feel dumb whereas to someone with a growth mindset, effort and difficulty make them feel smarter because they know they are learning and value learning and the learning process. These differences in growth and fixed mindset greatly affect a person’s mental health, as those with the fixed mindset have higher levels of depression. Those extrinsically motivated and have a fixed mindset showed higher levels of depression because they “ruminated over their problems and setbacks, essentially tormenting themselves with the idea that the setbacks meant they were incompetent or unworthy,”
because people with a fixed mindset believe that failures label them and leave no route to success. When those who are intrinsically motivated and have a growth mindset are faced with depression that the more depressed they feel, the more determined they are to not be depressed: “The more depressed people with the growth mindset felt, the more they took action to confront their problems, the more they made sure to keep up with their schoolwork, and the more they kept up with their lives. The worst they felt the more determined they became!” Intrinsic motivation promotes mental wellbeing through a growth mindset rejecting labels like failure thus dispelling consequential feelings of helplessness by appreciating challenge and setbacks as part of the learning process. Challenge invigorates intrinsically motivated people, engaging and challenging them to learn and grow leading to strong mental health and well-being.

This strong mental health and well-being proves to be a result of the growth mindset values in additions to being greatly affected by creativity, at least minimally through creative problem solving. In addition, “by facing your fears and acting you become more self-confident and optimist.” (Bilanich, 2009) Since intrinsic motivation is conducive to creativity, creative thinking and creative problem solving builds confidence and optimism, coupled with the growth mindset value that challenges are not negative, but part of the learning process, fuel determination and a strong work ethic. These elements of intrinsic motivation prevent someone who is intrinsically motivated from ever feeling doomed to failure, incompetent or mentally stuck, demonstrating how intrinsic motivation directly impacts and benefits a person's mental health and well-being.
Mindsets with Depression

As a psychologist and an educator, I am vitally interested in depression. It runs wild on college campuses, especially in February and March. The winter is not over, the summer is not in sight, work has piled up, and relationships are often frayed. Yet it's been clear to me for a long time that different students handle depression in dramatically different ways. Some let everything slide. Others, though feeling wretched, hang on. They drag themselves to class, keep up with their work, and take care of themselves — so that when they feel better, their lives are intact.

Not long ago, we decided to see whether mindsets play a role in this difference. To find out, we measured students' mindsets and then had them keep an online “diary” for three weeks in February and March. Every day they answered questions about their mood, their activities, and how they were coping with problems. Here's what we discovered.

First, the students with the fixed mindset had higher levels of depression. Our analyses showed that this was because they ruminated over their problems and setbacks, essentially tormenting themselves with the idea that the setbacks meant they were incompetent or unworthy: “It just kept circulating in my head” You're a dope.” “I just couldn't let go of the thought that this made me less of a man.” Again, failures labeled them and left them no route to success.

And the more depressed they felt, the more they let things go; the less they took action to solve their problems. For example, they didn't study what they needed to, and they didn't keep up with their chores.

Although students with the fixed mindset showed more depression, there were still plenty of people with the growth mindset who felt pretty miserable, this being peak season for depression. And here we saw something really amazing. The more depressed people with the growth mindset felt, the more they took action to confront their problems, the more they made sure to keep up with their schoolwork, and the more they kept up with their lives. The worse they felt, the more determined they became!
SUCCESS

Success may be the most compelling benefit of intrinsic motivation. Though the societal idea of success has connotations to financial profit that is not the only measure or label for success. However, any one person’s definition of success is prejudiced, as it is contingent on that person’s own goals and hierarchy of values. People frequently impose their own definition of success upon others through a judgment of whether another person is successful or not. For this reason, for the purpose of this book, someone is only deemed successful when the label is self-imposed; “success” is only labeled “success” when also done so from the perspective of the person trying to achieve a certain goal or working with a specific purpose.

Someone who is intrinsically motivated would not set out with the intention of pursuing the societal idea of success, strict financial success, because as previously stated are driven by curiosity or more strongly over time by a purpose. The “most successful people, evidence shows, often aren’t directly pursuing conventional notions of success. They’re working hard and persisting through difficulties because of their internal desire to control their lives, learn about their world, and accomplish something that endures.” Intrinsic motivation has many levels of fervor and the most successful are the most intensely and deeply internally motivated. The “autonomous people working toward mastery perform at high levels. But those who do so in the service of some greater objective can achieve even more. The most deeply motivated people – not to mention those who are most productive and satisfied – hitch their desires to a cause larger than themselves.” Having a purpose larger than one’s self adds incentive to achieve goals, to be successful in the set endeavors. The added incentive is not an external motivator but stimulates an additional intrinsic motivation by inspiring internal desire to help, make an impact, improve something existing, provide hope, etc. The greater the intensity of a person’s intrinsic motivation, the more fortified their grit becomes, the more creative they are, and as a result, the more likely they are to be successful in achieving their goal and in being financially profitable.

(Pink, 2011, p. 79)

(Pink, 2011, p. 133)
An intrinsically motivated person is self-directed in pursuing their goal, fueled by their purpose, armed with grit. They are creative problem solvers allowing them the tools and confidence to face and overcome more challenges in turn building more confidence and optimism. This confidence and optimism actually translates into success in a few different ways. People are attracted to other people whom are confident and optimistic. People are more willing to help someone put whom they are attracted to; even banks are more likely to grant loans to people who are happy, optimistic, and confident. The depth and potential intensity of intrinsic motivation increase with time, illustrating how someone who is intrinsically motivated will always outperform someone who is extrinsically motivated in the long run. Even when “the path to mastery – becoming ever better at something you care about – is not lined with daisies and spanned by a rainbow. If it were, more of us would make the trip. Mastery hurts. Sometimes – many times - it's not much fun.”

George Allen, a revered NFL football coach said “Health, happiness and success depend upon the fighting spirit of each person.” This fighting spirit is a person’s resilience, persistence, and work ethic: grit and each person is the autonomy component.
Puzzles and Praise

To start, Carol Dweck and her team gave all the students a really easy non-verbal IQ test. At the end of the test they praised the students in one of two ways: One group was praised for their intelligence: “Wow great job - You must be really smart at this” The other group was praised for their effort: “Wow great job - You must of worked really hard at this”

Dweck wanted to look at how this subtle difference in the way that they were praised effects the students mindset and performance. After praising the children they gave them an option for the next test. One choice was to take a harder test that Dweck told the children would be quite difficult, but a great opportunity to learn and grow. The other choice was to take a second test that was similar to the first, and one they would surely do well on. 67% of the students that were praised for their intelligence chose the easier option. While 92% of the students that were praised for their effort chose the harder option!

“The child or adult hears: oh, you think I'm brilliant and talented. That's why you admire me— that's why you value me. I better not do anything to put this support disapprove this evaluation. As a result they enter a fixed mindset, they play it safe in the future and they limit the growth of their talent. Whereas focusing on the strategies they use, the way they're stretching themselves, and taking on harder tasks, the intense practice they are doing. Those are the kinds of things that say to a child or an older athlete: about the process of growth. As a result, they don't feel: oh if I make a mistake you won't think I'm talented – they think: oh, if I don't take on hard things and stick to them, I'm not going to grow.”

(Dweck, 2008)
(Dweck, 2010)
The next test they gave the students was incredibly difficult - One that they would surely all fail. Carol Dweck wanted to look at how the different groups attacked this challenge. She noticed:

The effort group worked harder, longer, and actually enjoyed this test more than the intelligence group - Who quickly became frustrated and gave up early.

After this artificially induced failure round, the children were given one final test.

For the final step of the study Carol Dweck and her team gave all of the students a test that was just as easy as the first. The results are pretty convincing:

The intelligence group actually did worse on this test than they did on the first. Their average score dropped by 20%

The effort group did better. Their average score ended up increasing by 30%.
If you look at present-day schooling the way it is, it's quite easy to figure out where it came from. It came from about 300 years ago, and it came from the last and the biggest of the empires on this planet. ["The British Empire"] Imagine trying to run the show, trying to run the entire planet, without computers, without telephones, with data handwritten on pieces of paper, and traveling by ships. But the Victorians actually did it. They created a global computer made up of people. It's still with us today. It's called the bureaucratic administrative machine. In order to have that machine running, you need lots and lots of people. They made another machine to produce those people: the school. The schools would produce the people who would then become parts of the bureaucratic administrative machine. They must be identical to each other. They must know three things: They must have good handwriting, because the data is handwritten; they must be able to read; and they must be able to do multiplication, division, addition and subtraction in their head. They must be so identical that you could pick one up from New Zealand and ship them to Canada and he would be instantly functional. The Victorians were great engineers. They engineered a system that was so robust that it's still with us today, continuously producing identical people for a machine that no longer exists. The empire is gone, so what are we doing with that design that produces these identical people, and what are we going to do next if we ever are going to do anything else with it?

“Schools as we know them are obsolete”

So that's a pretty strong comment there. I'm not saying they're broken. It's quite fashionable to say that the education system's broken. It's not broken. It's wonderfully constructed. It's just that we don't need it anymore. It's outdated. They don't need to be able to multiply numbers in their heads. They do need to be able to read. In fact, they need to be able to read discerningly. How is present-day schooling going to prepare them for that world?

Well, I bumped into this whole thing completely by accident. Fourteen years ago, I taught people how to write computer programs in New Delhi. And right next to where I used to work, there was a slum. I used to think, how on Earth are those kids ever going to learn to write computer programs? Or should they not? At the same time, we also had lots of
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("Sugata Mitra Hole in the Wall Project", n.d.)

("Computers in the a Wall", n.d.)
parents, rich people, who had computers. These parents used to tell me, “You know, my son, I think he's gifted, because he does wonderful things with computers. And my daughter -- oh, surely she is extra-intelligent.” And so on. So I thought, how come all the rich people are having these extraordinarily gifted children? (Laughter) What did the poor do wrong? I made a hole in the boundary wall of the slum next to my office, and stuck a computer inside it just to see what would happen if I gave a computer to children who never would have one, didn't know any English, didn't know what the Internet was.

The children came running in. It was three feet off the ground, and they said, “What is this?”

And I said, “Yeah, it's, I don't know.”

They said, “Why have you put it there?”

I said, “Just like that.”

And they said, “Can we touch it?”

I said, “If you wish to.”

And I went away. About eight hours later, we found them browsing and teaching each other how to browse. So I said, “Well that's impossible, because -- How is it possible? They don't know anything.”

My colleagues said, “No, it's a simple solution. One of your students must have been passing by, showed them how to use the mouse.”

So I said, “Yeah, that’s possible.”

So I repeated the experiment. I went 300 miles out of Delhi into a really remote village where the chances of a passing software development engineer was very little. (Laughter) I repeated the experiment there. There was no place to stay, so I stuck my computer in, I went away, came back after a couple of months, found kids playing games on it.

When they saw me, they said, “We want a faster processor and a better mouse.”
So I said, “How on Earth do you know all this?”

And they said something very interesting to me. In an irritated voice, they said, “You’ve given us a machine that works only in English, so we had to teach ourselves English in order to use it.” (Laughter) That’s the first time, as a teacher, that I had heard the word “teach ourselves” said so casually.

Here’s a short glimpse from those years. That’s the first day at the Hole in the Wall. On your right is an eight-year-old. To his left is his student. She’s six. And he’s teaching her how to browse. Then onto other parts of the country, I repeated this over and over again, getting exactly the same results that we were. [“Hole in the wall film - 1999”] An eight-year-old telling his elder sister what to do. And finally a girl explaining in Marathi what it is, and said, “There’s a processor inside.”

So I started publishing. I published everywhere. I wrote down and measured everything, and I said, in nine months, a group of children left alone with a computer in any language will reach the same standard as an office secretary in the West. I’d seen it happen over and over and over again.

But I was curious to know, what else would they do if they could do this much? I started experimenting with other subjects, among them, for example, pronunciation. There’s one community of children in southern India whose English pronunciation is really bad, and they needed good pronunciation because that would improve their jobs. I gave them a speech-to-text engine in a computer, and I said, “Keep talking into it until it types what you say.” They did just that.

I decided I would destroy my own argument by creating an absurd proposition. I made a hypothesis, a ridiculous hypothesis. Tamil is a south Indian language, and I said, can Tamil-speaking children in a south Indian village learn the biotechnology of DNA replication in English from a street side computer? And I said, I’ll measure them. They’ll get a zero. I’ll spend a couple of months, I’ll leave it for a couple of months, I’ll go back, and they’ll get another zero. I’ll go back to the lab and say that we need teachers. I found a village. It was called Kallikuppam in southern India. I put in
Hole in the Wall computers there, downloaded all kinds of stuff from the Internet about DNA replication, most of which I didn't understand.

The children came rushing, said, “What’s all this?”

So I said, “It’s very topical, very important. But it’s all in English.”

So they said, “How can we understand such big English words and diagrams and chemistry?”

So by now, I had developed a new pedagogical method, so I applied that. I said, “I haven’t the foggiest idea.” (Laughter) “And anyway, I am going away.” (Laughter)

So I left them for a couple of months. They’d got a zero. I gave them a test. I came back after two months and the children trooped in and said, “We’ve understood nothing.”

So I said, “Well, what did I expect?” So I said, “Okay, but how long did it take you before you decided that you can’t understand anything?”

So they said, “We haven’t given up. We look at it every single day.”

So I said, “What? You don’t understand these screens and you keep staring at it for two months? What for?”

So a little girl who you see just now, she raised her hand, and she says to me in broken Tamil and English, she said, “Well, apart from the fact that improper replication of the DNA molecule causes disease, we haven’t understood anything else.”

So I tested them. I got an educational impossibility, zero to 30 percent in two months in the tropical heat with a computer under the tree in a language they didn’t know doing something that’s a decade ahead of their time. Absurd. But I had to follow the Victorian norm. Thirty percent is a fail. How do I get them to pass? I have to get them 20 more marks. I couldn’t find a teacher. What I did find was a friend that they had, a 22-year-old girl who was an accountant and she played with them all the time. So I asked this girl, “Can you help them?”
So she says, “Absolutely not. I didn’t have science in school. I have no idea what they’re doing under that tree all day long. I can’t help you.”

I said, “I’ll tell you what. Use the method of the grandmother.”

So she says, “What’s that?”

I said, “Stand behind them. Whenever they do anything, you just say, ‘Well, wow, I mean, how did you do that? What’s the next page? Gosh, when I was your age, I could have never done that.’ You know what grannies do.”

So she did that for two more months. The scores jumped to 50 percent. Kallikuppam had caught up with my control school in New Delhi, a rich private school with a trained biotechnology teacher. When I saw that graph I knew there is a way to level the playing field.
MOTIVATION IN CONTEXT
MOTIVATION IN CONTEXT

Regardless of the context, there are three elements that when valued, greatly foster and contribute to intrinsic motivation in any community or environment: dignity, energy and self-management. A community or environment that respects every individual, cultivates dignity as people are compelled to see their own value. Respecting and valuing one’s self is crucial to internal motivation; this feeling of self worth, brings a sense of competence and desire to achieve (autonomy and grit). With dignity, people strive to do their best. Valuing the import of energy helps to ensure the longevity of motivation in any context. An energetic environment is alive, busy, and active keeping everyone engaged. The energy of a community or environment should be designed appropriately to keep everyone actively participating. When a community or environment allows, or better yet, encourages self-management, people “make appropriate choices, guide and discipline themselves, and work willingly.” Self-management allows for autonomy, a fundamental ingredient for intrinsic motivation. Together, dignity, energy and self-management promote autonomy, purpose and grit, a t for lasting intrinsic motivation.
Motivation is has an undeniable role in the workplace. The difference between employees who are intrinsically motivated and employees who are extrinsically motivated is that those who are intrinsically motivated are long-term productive and happy employees. Extrinsically motivated employees may be productive in the short term but their productivity along with their happiness fades with time. Though, motivation and its role in the workplace create an interesting relationship; people work to make money. Wouldn’t that make money a reward for doing work and therefore wouldn’t the work be extrinsically motivated?

Daniel Pink answers these questions in his book Drive by describing and the role of money in the workplace in regard to intrinsic and extrinsic motivation. “Motivation in the workplace is a simple fact of life: People have to earn a living. Salary, contract payments, some benefits, a few perks are what I call ‘baseline rewards.’ If someone’s baseline rewards aren’t adequate or equitable, her focus will be on the unfairness of her situation and the anxiety of her circumstance. You’ll get neither the predictability of extrinsic motivation nor the weirdness of intrinsic motivation. You’ll get very little motivation at all.” (Pink, 2011, p. 35)

Pink goes on later to explain that money plays a role for more intrinsically motivated people and more extrinsically motivated people, just very different roles. He explains “… one reason fair and adequate pay is so essential is that it takes the issue of money off the table so they can focus on the work itself. By contrast, for many [extrinsically motivated people], money is the table.” While everyone is trying to earn a living, those who are extrinsically motivated, only work for the money. Those who are intrinsically motivated are drawn by the work and the salary allows them to stay.

(Pink, 2011, p. 79)
While children are intrinsically motivated to learn about the world around them, parenting plays a major role in the fostering and developing of intrinsic motivation beyond the infantile stage. “Children who receive the right sort of support and encouragement during these years will be creative, adventurous learners throughout their lives. Children who do not receive this sort of support and interaction are likely to have a much different attitude about learning later in life.” Parents have the largest impact in shaping their children’s motivators both by example and by instilling values. What motivates someone and how he or she is motivated is first formed at a young age, solidifying the significance of parenting in motivation. When a child sees their parents and other family members working hard to achieve, they tend to develop a similar strong work ethic. “And after a while, they don’t need hugs, praise, or treats for doing well. Achievement has become a highly valued motivator in its own right.” One way, parents and family teach work ethic and intrinsic motivation to children is by example. Gifts and praise become a secondary reward to accomplishments, as the act of achieving is the primary reward. Since infants learn from everything they do, especially from playing, unstructured play is a crucial part of a child’s motivation, learning, and development.

(Carlton, 2003)

(Smith, 2004, p. 282)

(Smith, 2004, p. 283)

(Carlton, 2003)
In “Early Childhood Motivation,” Martha Carlton, Ph.D, of the National Association of School Psychologists says, “For parents of young children, the goal should be to appropriately support the development of motivation so that there is a proper foundation for optimal educational growth.” Carlton warns parents about the use of extrinsic rewards, as it severely impairs a child's development of internal motivation. Carlton continues, “Praise for an accomplishment is appropriate, but be sure that your child is doing a task because she is interested, not because she thinks it will bring praise from you.” When a child performs a task for the purpose of receiving praise, praise becomes an external motivator. A child’s own interest and desire to perform the task is key. When parents or even other adults impress external rewards for the same task, the internal reward system is replaced with one that depends upon outside forces to supply the reward. After time, the child will only feel successful if someone else rewards them for accomplishments. “They lose their intrinsic motivation and may only feel success when someone else judges them as successful.”

To promote the continued development of motivation, parents should “encourage participation in music, art, computers, sports and clubs that offer kids an avenue to work hard and take pride in activities that excite them.” Exposure to as many subjects as possible allows a child to really explore their interests and engage in them. It's important for parents to not dismiss or devalue a child's efforts but rather encourage them to do their best. This will help build a child's grit as children learn grit when successful at a challenging task.” Achieving a goal and over coming a challenge “leads to higher self esteem and feelings of self worth, which leads to strengthened motivation.”
Intrinsic motivation is an integral part of learning and therefore one would think that it would be an integral part of schooling and the greater education system, and yet most schools in the education system devalue intrinsic motivation. As previously stated, when dignity, energy and self-management are relished intrinsic motivation is likely to flourish. Instead of schools creating an environment that promotes and encourages intrinsic motivation, schools are “bribing students into compliance instead of challenging them into engagement… we need to help them move toward autonomy, mastery, and purpose.” When students lack the opportunity to exercise autonomy, curiosity, mastery and grit in schools, it is hard to develop internal motivation. This “bribing” that Pink is referring to is the use and importance grades have in the education system. School’s emphasis on grades and achieving scores as proof of knowledge makes them a reward, fueling external motivation. Pink says, “good grades become a reward for compliance – but don’t have much to do with learning.” Grades are just one element of the problem.
With so much pressure to get certain scores or grades, students feel the stress as well as teachers. Often places where this stress is felt most, teacher will cater course contents to the tests. One of the best examples of when students simply study for a test is the SAT. Students study and memorize vocabulary for the test but have no idea how to use the words in a sentence and often never will. They are simply memorizing the words for the test. The stress to achieve is rising with the rising importance of standardized test scores and is alienating large portions of students who do not respond well to the memorization and testing technique of education. Those who feel alienated, those “whose grades don’t measure up often see themselves as failures and give up trying to learn.” They end up hating school and not wanted to learn. If purpose of going to school is to learn, shouldn’t that what schools put the most importance on?

This method of schooling is not only causing many students to hate school but it is also causing a lack of creative thinking entering the workforce. A recent article in Wired magazine says, “Rather than teaching our children to memorize facts, we need to make sure they are engaged and creative problem-solving, as this has a direct link to an increasing creative thinking. A very large part of that answer lies in our ability to create engaging learning environments activate multiple senses and unable children of different learning styles to succeed.” By engage student through different styles, their senses and their environment, they will gain the tools to develop their curiosity and desire to learn.
“All kids start out as curious and self-directed... But many of them end up as disengaged and compliant... What's going on? Maybe the problem is us – the adults who are running schools.” After a few years in school, many children are blamed for not being motivated or not trying hard enough in school, told that they should want to learn and yet our schools are making the learning a chore, taking the joy and exploration and curiosity out of learning. While all children so want to learn and start out curious, that curiosity and desire to learn can be lost if not encouraged and nurtured. “Curiosity, though intrinsic to young children, may not be all that resilient. In fact, researches shown that children are quite vulnerable to situational cues when it comes to exploring an object, and are particularly responsive to adult feedback. It may be that for curiosity to develop during school-aged years, teachers must nurture and guided it.”

Encouraging curiosity is scary for many adults as the results are not clearly defined and the results cannot be clearly marked on a chart of numbers of scores. Everyone learns differently and has different interests and by encouraging curiosity, in turn fostering intrinsic motivation to learn, large portions of students are not alienated and none give up trying to learn. “When we encourage children to be curious, the learning process can seem messy, inefficient, indirect, slow, and wasteful – but if guided and supported properly, it can lead to probing thought, intellectual zeal, and drive to find out – exactly what children most need to become well-educated.” Is the goal of schools not to educate everyone?

There are many programs that challenge the current trend in schools and have adopted creative and new policies of all kinds but I do not discuss any of them here.
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