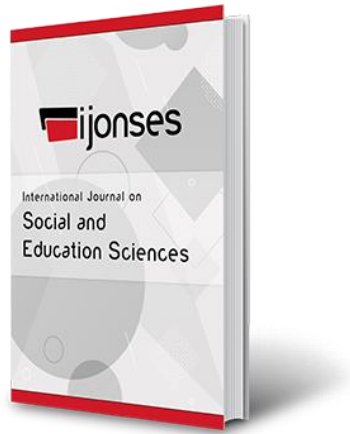


Unifying Education as Problem Solving



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To cite this article:

Hulbig, P.R. (2024). Unifying education as problem solving. *International Journal on Social and Education Sciences (IJonSES)*, 6(1), 117-129. <https://doi.org/10.46328/ijonSES.637>

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Article Info

Article History

Received:

28 September 2023

Accepted:

29 December 2023

Keywords

Education policy

Problem solving

Self-regulated learning

Child scientist theory

Abstract

Public education in the United States is breaking down on two dimensions: its bureaucratic organization and its conceptualization of the learning process. These breakdowns result from attempts to deliver public education using business models and have failed to support the needs of both students and teachers. This breakdown has been further exacerbated by an old misconception about intelligence based on inherent, immutable aspects of biology. This view medicalizes learning problems, enabling schools to categorize already marginalized students producing a stigmatization that negatively impacts their development. To address these problems it is proposed that public education be reframed as a developmental specialization of problem-solving skills. This reframing would ground the conceptualization of learning in the most natural human learning process: problem-solving. Such an approach could directly support students in addressing problems that undermine their individual performance. This problem-solving-centered approach could form both a supportive and successful core educational routine that would model and support stronger collaborative structures between students, teachers, and administrators, building stronger institutions.

Introduction

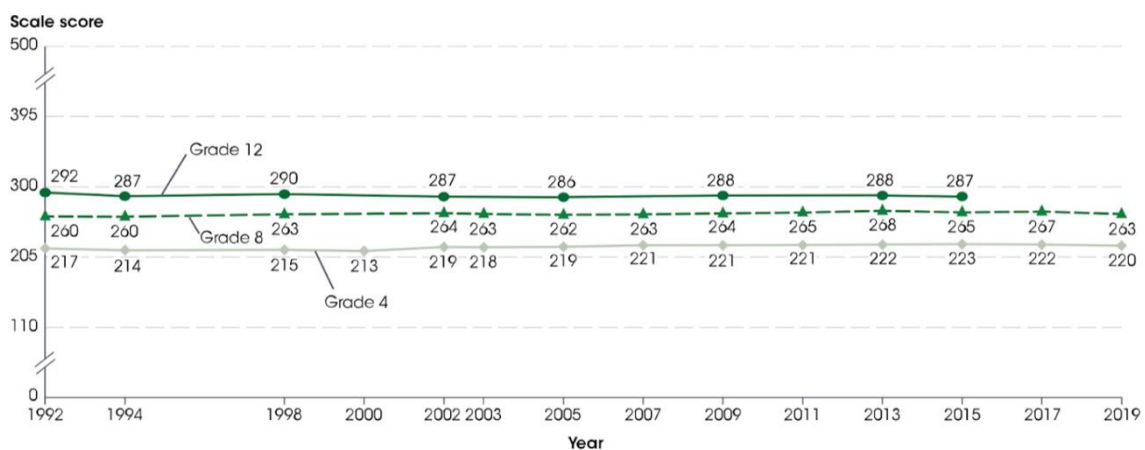
Business Modeled Education

Modern education in the United States has a long history of utilizing practices developed for businesses in their public education systems. Horace Mann, the founder of the public education movement in America, framed the idea of public education as a way to improve economic opportunities by providing more highly skilled workers for America's factories. As the number of students receiving public education increased, large schools imported bureaucratic institutional structures from business models to organize and administer education (Mondale, 2002). Educational needs and roles were identified and divided using categories such as age, sex, race, grade levels, and subjects. The invention of the Intelligence Quotient enabled the categorization of students into ever more subtle levels of discrimination.

In 1983 Ronald Reagan's secretary of education, Terrel Bell, appointed a commission that produced the report *A Nation at Risk* (National Commission on Excellence in Education, 1983). This report concluded that American teachers were underqualified and underpaid and that most public schools provided poor working conditions for both students and teachers. This report was followed by the publication of *A Nation Prepared* (Carnegie Forum

on Education, & the Economy; 1986), which proposed a plan to bring increased professionalism and standards to address these problems. The commission proposed standards for teacher education, which led to the formation of The National Board for Professional Teaching Standards, creating a path to achieving professional teaching status in public education through national recognition and certification.

Teachers pushed to be seen as professionals, like businessmen or doctors, believing it would increase both pay and respect. Teachers have historically been underpaid, particularly when considering the job's importance and complexity (Stanford, 2023). Sadly, the move towards greater professionalism did not have this impact (Allegretto & Mishel, 2020). While the movement led to the development of higher standards for schools of education, certifications for teaching, and a well trained class of teaching professionals, it did not lead to more financially secure or independent teachers. The average teacher today is even more financially insecure than ever. With many leaving the career because they cannot find a job that will cover the expense of the student loans that they were required to take on to enter the profession (Reilly, 2018; Stanford, 2023). What is more disconcerting is that student performance over this time period showed virtually no impact on student test scores in reading and math. Then in 2001, the No Child Left Behind Act (NCLB) was passed.



Graph 1. US Reading Scores in 4th, 8th and 12th Grade

(Note: From the National Assessment of Educational Progress (NAEP) 1992-2019. Includes public, private, Bureau of Indian Education, and Department of Defense Education Activity schools. Assessment was not conducted for grades 8 in 2000 or 12 in 2000, 2003, 2007, 2011, 2017 and 2019.)

The intention of this bill was to inject more business-like practices such as competition, financial incentives, and accountability into education. The program sought to hold teachers and schools accountable for the educational outcomes and incentivized bridging the gap between poor and high-performing students and districts. NCLB required all public schools receiving federal funds to administer standardized testing and disseminate information on student achievement and school performance to the public (Dee & Jacob, 2011; Darling-Hammond, 2015). Schools must demonstrate annual yearly progress (AYP) on these assessments. Schools that failed to make AYP were publicly labeled as "In Need of Improvement," and required to develop an improvement plan in their areas of identified weakness. If a school continued to fail to demonstrate AYP, they would be forced to offer supplemental education services, like tutoring, to struggling students. Schools that failed to make AYP for more than three years could be compelled to replace staff, introduce a new curriculum, and extend class times. Repeated

failure to reach AYP could result in closure, turning the school over to a private company to be run as a charter school, or having the state's office of education run the school directly if there were no private companies to take it over.

It was reasoned a business-oriented charter approach would bring stability to failing schools. However, the charter school model has only demonstrated isolated success. A 2013 study by the Center for Research on Education Outcomes (CREDO) at Stanford University found mixed results for charter schools when compared to traditional public schools. The CREDO study also identified a segregating trend related to the institution of charter schools that has since been found to be accelerating (Adamson & Galloway, 2019). Farmer, Poulos & Baber (2020) found the Chicago-based charter school market created both spatial and financial inefficiencies that resulted in systemwide budgetary cuts. These budget cuts resulted in school closures and disruptions of service in already distressed neighborhoods. Rather than uplifting students in struggling communities by bringing them more high-quality options, the charter school movement has led to increased disparities and segregation of poor and minority communities (Williams, 2023).

Some charter schools have managed to achieve success (Abdulkadiroglu et al., 2011), and some (Booker et al., 2018; Dobbie & Fryer, 2015) have found that successful charter schools can provide high academic standards, productive achievement-oriented student cultures, and provide greater preparation for college. Some proponents (Dobbie & Fryer; 2013) have suggested that 45 percent of the variation seen in successful charter schools was attributable to their ability to employ frequent teacher feedback, data to guide instruction, high-dosage tutoring, increased instructional time, and high expectations. However, others have argued that the academic gains demonstrated by charter schools are the result of being afforded the ability to accept or reject students, rather than being required to teach all students, as in traditional public education. This has led to charter schools draining public schools of high-performing students and claiming success that is more attributable to their exclusivity and selectivity (Frankenberg, 2011). Also, much like the impact of professionalizing the status of teachers, no wide gains have been realized in academic test scores since the institution of the charter school movement (Williams, 2023).

The Medical Model Mentality

The medical model is a general guiding conception of how learning works at a fundamental biological level that is widely held and is infrequently challenged due to its broad cultural acceptance. However, the cultural roots of this assumption, which sees inborn, intrinsic, biological features of a learner as chiefly responsible for their success, can be traced to the beliefs of eugenicists and slave owners of an earlier era (Stoskopf, 2012). The modern medical model uses a scientific framing of a general belief that some students are born with 'good' genes and others are born with 'bad' genes, and these inherent defects can be diagnosed (Ansalone, 2006). It is the diagnostic component that delineates the medical model from earlier prejudicial beliefs that were codified, like the Jim Crow Laws of a century ago, providing the caveat that separates it from its purely prejudicial precursors. Interestingly, while many of the most egregious violations of humanity perpetrated by practitioners of the medical model have been presented as treatments for the marginalized in society, the conception of treatment may be the one positive,

which, perhaps, holds the power to undermine the more historically prejudicial aspects of the medical assumption. This is because those with diagnosed disabilities have been able to demonstrate wide-ranging success in their powers to develop themselves when treated properly and supported personally.

The medical model maintains and proliferates negative prejudices in another way that can be best explained through Carol Dweck's (2017) theory of the growth and fixed mindset. A fixed mindset is a belief that one's abilities, talents, and intelligence are predetermined and cannot be changed or improved. In learning situations, students with a fixed mindset tend to avoid challenges, give up easily, and view failure as a reflection of their own inadequacies. Frequently, these students resist feedback and feel threatened by the success of others, as it challenges their own sense of self-worth. In contrast, a growth mindset holds that one's abilities can be developed and improved through hard work, learning, and dedication. The medical model can accommodate both of these perspectives. So, depending on the mindset, a student's weakness can be conceptualized as something they can treat, or as an unworkable fixed defect. So even as identification and diagnosis have led science to solve many problems confronting students with unique learning needs, the same processes can be framed in the context of immutable disability, leading educators and students to manifest a fixed mindset based on medical reasoning.

Research into stigma (Major & O'Brien, 2005; Evans, 2014) and stereotype threat (Haft et al., 2022; Pennington et al., 2016) suggest that the diagnostic approach of the medical model may more likely produce close mindsets that impair learning. A systematic review undertaken by Haft et al. (2022) found that stigma and stereotype threat in students diagnosed with specific learning disability (SLD) related to both academic difficulties and psychological adjustment. Zhao et al. (2019) found that adolescents with diagnosed SLDs were less persistent and more likely to academically disengage due to stereotyping. This research suggests that the standard medical model of testing and diagnosing young children for learning disabilities runs a substantial risk of exacerbating the academic weaknesses of students, particularly when framed in the context of an expert telling the students what is wrong with them, rather than engaging with the student in a process of inquiry and problem solving around strengths and weakness (Haft et al., 2022; Hulbig, 2020).

Reframing Education as Problem Solving

One way of addressing stereotype threat and the cultural tendency to impose a prejudicial medical model is by making students aware of the phenomena's occurrence and impact through mindfulness training and the use of positive role models (Spencer et al., 2016). New approaches to testing that invite students into the diagnostic process to increase the student's self-understanding of their own learning show promise in the ability to reframe diagnosis as self-discovery and personal problem-solving (Hulbig, 2021). The central issue is the underlying mindset and guiding logic that underpin a belief that for some conditions there is simply no hope to overcome. However, all conditions can be broken down into specific constituent problems, and problems can be solved.

When students with disabilities are able to frame their condition in terms of problems that confront them they become better able to develop solutions and workarounds to address their conditions. Solutions can be found as problems are framed around growth. While disability is the result of some kind of damage, healing is the result of

problem-solving. This is why the field of physical therapy has made helping patients understand their conditions an important piece of their practice. As patients learn to better treat themselves as a response to an injury, the better their recovery. This is not simply a quaint philosophy, the impact of health knowledge leading to improved self-regulatory behaviors, which in turn leads to more productive health outcomes is well established. In fact, recent studies have tied part of the reduction of American life expectancy to a general decline in the public understanding of health issues (Li et al., 2018).

The connection between learning about one's condition and better health outcomes is well established, but what has been lost in the mixing of prejudice with the medical model of education is the relationship of problem-solving to the process of healing. Problem-solving is a core educational routine. In fact, in recent years the realization of the preeminence of problem-solving in learning and education can be seen in the wide and increasing acceptance of project-based learning approaches. However, the idea of problem-solving being critical to education is not new and has been advocated by some of the United States' most influential educators like John Dewey and Maria Montessori, whose approaches consistently show strong results when properly practiced (Sahlberg, 2020). Moreover, problem-solving skills can be employed in a metacognitive way enabling students to use information developed in the solving of one problem in their life to be redeployed in the service of solving different yet analogous problems (Schuster et al., 2020).

Why Problem Solving?

When one looks beyond the field of education it becomes clear that problem solving is at the heart of what is conceptualized as learning. It is hard to imagine an educational routine that does not involve problem-solving of some type, but what exactly is problem-solving? Problem Solving can take many forms based on the situation, but the underlying process of problem-solving is surprisingly unitary. Often we think of logic, reasoning, computation, and mathematics as types of problem-solving in themselves, but these are, in fact, merely tools that are used in support of specific problem-solving situations. What problem solving actually *is* appears to be an interaction that occurs between an agent and their environment.

The classic human-centric definitions of problem-solving have needed to yield to broader definitions to accommodate cross-disciplinary findings. Rather than a quality of primates, many species of animal, slime molds, and even single-celled paramecium have demonstrated problem-solving. Mike Levin (2019), who demonstrated simple problem-solving behavior in biological nanobots created from undifferentiated stem cells, has proposed Scale-free Cognition. This theory (Levin, 2019; Pezzulo & Levin, 2016) assumes that cognitive systems do not need to be organic, just able to solve a range of problems in their environment to maintain a level of homeostasis. This approach sees cognitive agents as systems that are able to continuously take action to minimize the difference/errors, between the agent's current state and a natural set point that defines a possible future state the agent could achieve, enabling the system to pursue goals (Pezzulo & Levin, 2016). Levin's work has not only widened what can be considered a problem-solving entity but also opened up the conceptualization of problem-solving as something wider than an exclusively human activity.

For example, computers archive their problem-solving capacity through mechanical interactions only. The genius of Alan Turing was his realization that a machine could be built with the capacity to compute the answer to any calculation through the simple yet precise movements of the machine's parts. Today all computers are built from Turing's insights. Humans, despite the power of our cognitive insights, also seem to be performing a kind of universal problem-solving behavioral routine. This interactive problem-solving routine involves behaviors that organize engagement with the environment, making solutions more easily delineated to our cognition and explanations more easily communicable to each other. David Deutsch (2011), famous for formulating a description of the universal quantum computer, has presented a theory that human intelligence represents a special kind of universal problem-solving system, much like a Universal Turing Machine. However, rather than a mechanism capable of making sense from ones and zeros, the human brain uses a mechanism of explanation that imbues the infinite capacity for problem-solving seen in humans. Deutsch (2011) identified explanation and error correction as fundamental qualities of human problem-solving.

Processes of explanation and error correction have historically been considered primary components of learning and educational pedagogy. What has been less appreciated is the interactive nature that underpins the development of explanation. Great explanations are not simply born from the depth of individual cognitive capacity but through the quality of experiences and interactions with the environment. For this reason, the steps of the scientific method represent more than just a narrow subset of domain-specific knowledge in the field of science, but rather a distillation of the underlying mechanical process that humans engage in when problems are solved, regardless of domain. The most powerful evidence that the scientific method is capturing a process that is far more fundamental to human learning than historically appreciated comes from investigations revealing that from a very young age children can be observed developing theories to explain and guide their behavior (Bonawitz et al., 2012). These observations have demonstrated children apply a very clear pattern of behaviors when confronted with a problem, starting with a theory, followed by an exploration stage that tests the theory, and then an explanation phase, where an attempt to make sense of what happened during the exploration is devised, leading to a new and better theory (Bonawitz et al., 2012). The relationship between these problem-solving steps taken by children and the scientific method did not go unnoticed and led to the development of the child scientist theory of human development (Scholl & Leslie, 1999).

The child scientist theory (Scholl & Leslie, 1999) found that children behaved like little scientists and scientists approached their craft using a natural set of skills they had been developing since childhood. This idea that there is something important and pure about the thinking of children is not a new one and can be traced back to the enlightenment ideas of Rousseau (1762). The child scientist theory has had a strong influence on modern teaching pedagogy, producing curriculum and encouraging teachers to produce lessons that are more interactive, such as project-based learning approaches (Chen & Yang, 2019).

Recursion in Cognitive Processes

Problem Solving is an organized interaction with the environment that is essentially built on one activity: the creation of accurate predictions about the environment. Accurate predictions require accurate identification of

relevant information in the environment. How the brain creates the perceptions to support problem solving reveals an underlying input of interactions with the environment that seem to be recursively occurring at all levels of the cognitive process. This is because even the process of sensory experience itself is a problem the organism must solve and is framed in an analogous process of theory creation and prediction that more sophisticated problem-solving is built upon (Seth, 2021).

Using only the limited interactions of light or sound waves with sensory receptors the brain produces rich, interactive perceptions. This is achieved not by presenting a transcription of what is there, like a camera. It is done by using environmental interactions to build our perceptions from the ground up. Far from being a true representation of objects in our environment, our sensory perceptions are simply our present best guess at what is there based on the comparison of sensory inputs with each other and past experiences. These perceptions are constantly being updated and influenced by the introduction of new information and are held together through the development of a flexible system of rule-like theories called heuristics. Heuristics are like rules of thumb that are used to quickly guide the generation of perceptions, which become more ingrained as they are demonstrated to be accurate through experience.

In his book *Visual Intelligence*, Donald Hoffman (2000) presents several of the heuristics that support the brain's construction of its visual experience. These rules that underpin how we build our perceptual experience are analogous to the rules of grammar that guide our construction of meaning from sound. Rather than hard and fast rules, sensory heuristics are more like hypotheses, predicting what is seen and heard. Heuristics are not so rigidly applied that they cannot be affected by the presentation of new or incongruent information. In fact, there is an analogous experience of illusion that occurs across sensory modalities. These are perceptions where the heuristics used to build one perception violate the rules of perception being used by other cognitive systems creating an identifiable paradox. Examples of this would be the famous picture by British cartoonist William Ely Hill that can simultaneously be viewed as either a young lady or old woman and the child's toy that produces a noise that can be interpreted as saying both "Green Lantern" and "Brainstorm":

<https://youtu.be/qXxV2C1ri2k?si=DVODOMVsQtq52YAo>

Cognitive heuristics do not seem to be simply ingrained but rather developed through interaction with the environment. For example, newborn infants require time to develop full visual capability. However, it has been shown that this is not simply a process of biological maturation (Hubel & Wiesel, 1970). If the eyes of a young child are covered for an extended period of time during the maturation process, the child will not develop the ability to see despite having fully biologically developed eyes and nervous systems.

Infants must interact with their environment to develop these underlying heuristics. A similar phenomenon may be an underlying cause in some cases of dyslexia (Hogan et al., 2014). This is because dyslexia is common in children who have had tubes placed in their ears at a very young age to open up the ear canal from being blocked with wax and fluid. Much like the developmental impact on sight when the eyes don't receive proper visual stimulation, early blockages can have a similar effect on the capacity to develop proper hearing, despite there being no discernable damage to the ears' physical or neurological capacity for hearing.

The relationship between biologically centered heuristic theories of perception and psychological interactionist theories suggests an underlying process that generates and evaluates theories through physical interaction. Elizabeth Spelke's (1994) work on the development of core knowledge proposed that infants have innate, domain-specific systems for understanding physical objects, space, number, and biological organisms. These innate systems provide further evidence for the idea that humans have these ingrained cognitive heuristics at the base of the ability to make mental simulations to understand the physical world.

This relationship between how sensory information is guided by heuristics to create a useful simulation of our environment is strikingly analogous to what is seen in children when they use their prior knowledge about their experiences to create useful cognitive simulations that regulate their behavior. Research across fields seems to be converging on a process that uses past experience to actively construct predictive perceptions to guide and support our actions (Seth, 2021). This connection is important because it extends through both the biological and psychological developmental processes and could indicate there is an interactive problem-solving process that transcends both. Such interdisciplinary correlations lend strong support to the child scientist theory.

Problem Solving and Education

If a singular problem-solving routine underlies perception and all domain-specific knowledge then the belief in a single unitary approach to education capable of supporting all kinds of learners is not only possible, it is conceptually fundamental and administrable. A singular recursive pattern of problem-solving is occurring at all morphogenic levels, and the activities of science and learning are bidirectional. For example, one of the most powerful cognitive phenomena in learning was initially described by John Flavell (1979) as metacognition and later expanded by Nelson & Narens (1990). This was the ability to separate from one's own subjective and abstract modes of thought in a way that allows for a second order understanding to be formed through reflection. Students who are able to bring metacognition into their cognitive processes are able to view, question, and manipulate their thinking and behavior to form a new perspective, identifying problems and solutions that would not be comprehensible from more subjectively embedded cognitive stances.

The cognitive role of metacognition is structurally very analogous to what is seen in the educational role of a teacher, mentor, or parent. In their role a teacher, mentor, or parent stands as a supporting observer of their student's behaviors, listening to their students' thinking and providing feedback that will lead the student to develop the accuracy and effectiveness of their behaviors in a given domain. This process in turn is strikingly similar to what is seen in the peer review processes employed by the field of science, with reviewers and referees playing that metacognitive role. This is more than a simple coincidence. It represents an extrapolation of an underlying problem-solving process at the root of human learning. When one begins to use the lens of an underlying biophysical interaction that produces problem-solving it becomes clear we have created systems of education that are not based on the fundamentals of this process. Subject-based knowledge is contingent on the development of problem-solving skills that grow from an organized process of environmental interaction driven by theory creation. Rather than traditional ideas that are only useful in the field of science, the process of hypothesis construction, testing, and reformulation is relevant to every field of human endeavor, because every

field of human endeavor involves finding the solution to ambiguous problems that may not have clear solutions.

Moreover, the broad declines in student performance seen in the United States, and the world more generally, are driven by the simple fact that fewer and fewer students are receiving the important metacognitive educational support and training they once did. Parents work longer hours, students have few siblings, educational budgets have been cut, and educational supports like tutors and mentors have become more expensive. Plus, computer-based technologies make it easier for individuals to withdraw from the environmental interactions that drive the problem-solving process, leading to an intellectual atrophy that undermines an individual's ability to develop. These factors leave both students and teachers unable to connect and engage in the problem-solving that would truly promote their learning. However, this understanding of problem-solving also helps identify the proper path to improving education. Rather than an aloof class of professional educators, students need teachers, who have been deeply trained in using problem-solving and can express that understanding to students. Rather than more testing to diagnose, categorize, and identify if a student is worth the investment of time and resources by a school district, all students should be provided with a mentor who is both trained and willing to spend the time supporting a student in learning how to apply the basic universal steps of problem-solving to their goals and problems.

A simple problem-solving process modeled on the scientific method would enable students to begin to learn how they can use data to support their own learning as well as support the learning of others they interact with. Such an approach would promote frequent student-teacher feedback and higher expectations as education will become viewed as a cyclical and unending developmental process of inquiry that the school is there to support. This will lead to students who come to understand how to rise to standards rather than falling into the mental traps that occur when they do not meet an imposed standard. The impact of stigmatizing can have real and lasting effects on a student (Corrigan & Rao, 2012; Kieling et al., 2011). It has been found that even subtle indications of stigmatization, such as dilapidated buildings and disorganized environments can impact student self-efficacy (Boardman & Robert, 2000; Harrison, 2018). More than this it has been found that the processes of identification and diagnosis of learning issues can produce feelings of inferiority and stereotype threat (Steele & Aronson, 1995).

Problem Solving as an Organizational Structure

Problem-solving is motivated by the intrinsic rewards that are driven by the ability to set and achieve goals. Rather than a top-down hierarchy-driven macro structure, education becomes a more bottom-up interaction that approaches students where they are and encourages their development toward a common goal. Such a problem-solving approach could be recursively implemented starting as a pedagogical format for instruction, which is also reflected in administration and all the way up through an educational system's broad institutional structures. Because the approach mirrors the fundamental learning process they are trying to support, the system becomes a support to the resolution of problems in the learning community.

The study of pedagogy reveals that perhaps the secret ingredient of all lessons is the ability to support a student's natural learning process. When students learn how to apply problem-solving behaviors to address the weaknesses of their own learning style they can become self-directed learners. Self-directed learning is the ability to

independently regulate, organize, and develop one's own learning toward goals (Cronin-Golomb & Bauer, 2023; Knowles, 1975). Self-directed learning could be a universal goal of public education, which, unlike other failed attempts at achieving a universal curriculum goal, like the NCLB act's universal reading goal, a problem-solving goal could be worked toward by all students because it is a goal tied to the process of learning and development, not the attainment of a single discrete skill.

Perhaps what is most interesting is the building evidence across scientific fields investigating phenomena related to problem-solving of the emergence of a step-by-step methodological approach that can be applied at the individual level of the student, the pedagogical level of the teacher, and the institutional level of administration. This is an insight that is rooted in a refinement of natural skills already present at the root of their learning process (Scholl & Leslie, 1999). With this insight in mind institutional structures can be developed capable of supporting a student's ability to see how their own unique cluster of abilities can be marshaled in the service of solving the problems confronting them. These institutional structures will derive their effectiveness from their close relationship to the inherent problem-solving approach they are trying to bolster.

Rather than layers of arbitrary bureaucracy, functioning as silos of specialization, a problem-solving approach would empower each level of the education process to address the educational problems they face at their scale. Students can be thought of as the base level of this structure, working toward an ultimate goal of self-directed learning and self-sufficiency. Teachers will use a similar problem-solving structure in an open and visible way to help their students see how problem-solving is used to address macro problems of classroom learning using a process of problem identification, hypothesis, testing, and repetition. Students with needs that produce problems that cannot be addressed by the student or the teacher in the classroom context will be passed on to administrative elements that will utilize a similar problem-solving approach around these more individualized issues. This problem-solving approach will identify the boundaries and weaknesses of the educational institution itself and lead to a focus on the institution's resources in a way that promotes increased productivity at every level.

Problem-solving approaches of individuals can be greatly bolstered through metacognitive self-reflection (Hulbig, 2023). Similarly, when a student can collaborate with another person the reflective behavior induced by interaction improves learning and problem-solving. It is this collaborative approach to problem-solving that underpins human learning and makes us the social organisms we are. Rather than business models and a professional class of teachers, students need the one-to-one support of another person to address the problems that confront them. High expectations and academic standards are important and arise naturally in this conception while minimizing feelings of inferiority driven by stigma. Rather than assessing students and teachers against a norm, they should be assessed against themselves, and their problem-solving progress toward goals. Even norm-based neurological testing should be done to benefit the students' own self-conception of their learning.

Conclusion

American education needs a radical restructuring that focuses educational institutions on the fundamental problems that prevent students from developing the skills of self-regulated learning they need to develop across

the lifespan, regardless of race, creed or disability. Rather than a business-modeled system that commoditizes education, neglects students who do not turn profits and treats teachers like information dispensers, a reconstituted education system would enable individual students to take control of their own learning and development. Teachers and administrators can promote this approach by employing the same problem-solving model that is at the fundamental core of the learning model to address the broader problems that may be impacting the student's experience. It will also teach students through example, bolstering their learning through direct behavioral observation and involvement in solving the problems that confront their education, and the nation.

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