



# The Storyline Approach in the Prevention of Substance Abuse Initiation

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## Abstract

Substance initiation and experimentation is a prevalent problem in many schools throughout the world. Numerous educational drug prevention programs are employed, showing different results and outcome. The Storyline approach is a philosophical method that involves many educational aspects. The use of the Storyline philosophy in the acquisition of life skills, education and drug prevention can result in a synergistic interaction of all three aspects that modify child's future behavior.

## General Background

Within the cluster of medical harms, substance abuse is among the most destructive and harmful. There has been a universal boost in the consumption of recreational, prescribed and illicit psychoactive substances. This increase has caused behavioral, psychological and physical problems. In many countries and cultures, it has reached epidemic levels. It is agreed that drugs are presently among the most acute global concerns.

Much of the concern pertaining to drug abuse focuses on the experimentation and initiation of various drugs by children and youngsters. It is very well known that children and adolescents use tobacco products, consume alcoholic beverages and experiment with drugs. Significantly, children and teenagers do not understand the long-term consequences of tobacco, alcohol and drugs, although continued consumption has been shown to have major harmful effects on their health. In all probability, even if youngsters are aware of the adverse effects, they tend to ignore or deny them. This is a major reason why drug abuse and alcohol dependence is becoming a worldwide trend and a way of life, among wealthy as well as underprivileged populations [1,2]. It should be asked, in light of these facts, why tobacco, alcohol and drug use remains so popular?

There is no simple answer to this question. More or less all addictive compounds overstimulate the brain's reward system, flooding it with neurotransmitters, including dopamine. This type of brain reaction produces emotional and behavioral changes, including euphoria and a sense of heightened pleasure. This impact can be so compelling, rewarding and forceful that the brain "requires" a repetition of the sensation. The increased understanding of the biological and biochemical mechanisms, as well as of the social psychological impact of drug use and abuse, have led to changes in the conceptions pertaining to long-term drug use and initiation [3,4].

Once a youth has taken up tobacco, alcohol or drugs and repeats this habit, s/he is likely to become addicted and should be offered treatment for abuse cessation. Given the severity of the worldwide substance abuse epidemic and the devastating health effects on both individual and society, many efforts are now made to curtail the problem [5].

In order to decrease the prevalence of substances initiation, it is crucial to increase awareness and promote research on effective prevention. Moreover, a better understanding of key factors in the interaction between the nervous system and addictive drugs is a promising venue that may lead to a reduction in substance experimentation by children and adolescents. In light of these important factors, the question of why, when and how children and youngsters initiate substance abuse is to be addressed.

## Children, Adolescents and Drugs

The high rates of adolescent substance experimentation, initiation and use are related to the development of risk-taking behavior. Many studies report that an earlier beginning is associated with more severe drug use and graver consequences [6-8]. Why, then, are children and adolescents so vulnerable to drug initiation and abuse? The answer to this question is complicated, but increasing evidence supports the notion of a biological basis.

Many studies indicate that the specific brain region involved in critical thinking and decision-making is not fully-developed in youngsters [9-11]. It is generally believed that brain development is a prolonged process that includes the establishment and elimination of neural connections [12,13]. A significant part of the neuronal development is the myelination of the neuronal axons, resulting in the insulation of neural connections that efficiently convey, and even enhance, neural information across the central nervous system [12,14]. The increase in myelination enables improved response speed and better integration of the neural circuitry necessary for the modulation of conduct [12,14]. Three brain regions have probably received the greatest attention in this regard: The hippocampus, the corpus callosum, and the frontal cortex. These changes occur during adolescence and ultimately yield amplified pace and improved information processing [12,15]. It is important to emphasize that our understanding of the neurobiology of substance use disorders is drawn from experiments and studies carried out on adults. However, youngsters undergo an essential stage of neuronal maturation, characterized by an augmentation in myelination and arborization in the nervous system. These changes lead to the induction of neurological regulatory processes, which facilitate changes in the neural structure of gray matter [16,17]. Drug abuse was also shown to disturb the neuroendocrine functioning and behavior [18,19]. These developmental changes result in an enhanced ability of distinct brain regions to maintain high cognitive control of behavior [10,20-22]. Several studies which applied functional magnetic resonance imaging have begun to elucidate differences in the adolescent brain function during the performance of different tasks. Evidence to suggest

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functional abnormalities between adolescents with substance use disorders and those who do not use drugs has been drawn from three task domains: Executive functioning, (including working memory), cerebral perfusion at rest and the presentation of substance-related cues [13,23,24]. Brain maturation may therefore facilitate the acquisition of a more sophisticated cognitive and perceptual understanding of the adolescent's environment [25].

In light of the ongoing neuronal developmental changes characterized by a lack of response inhibition [10] and a general inclination toward greater risk-taking [26], it is not surprising that the decision-making faculties are affected. These changes lead to difficulties when faced with decisions pertaining to substance initiation or experimentation [27]. Moreover, the situation becomes more complicated when a child or an adolescent is faced with situations involving substance use, and requires the consideration of multiple factors of which s/he may not be aware. Among these factors is the wish to be part of a group or obey family rules regarding substance use. These processes culminate in behaviors designed to agree or refuse substance initiation.

## Drugs in School

It is well-established that the initiation of alcohol or other substance use before the age of 15 doubles the risk of substance use dependence and criminal convictions in maturity, and significantly increases the chances of infectious diseases and teenage pregnancy [28]. Similarly, an early initiation of smoking is associated with a greater probability and severity of nicotine addiction and difficulties in withdrawal [29]. Moreover, earlier cannabis initiation increases the risk of later cannabis abuse and dependence [30]. Therefore, early substance use, including cigarettes, alcohol and drugs, remains a significant health concern [25]. Studies show that substance initiation usually begins in primary school, increases gradually and peaks in adolescence [31-33].

There is general agreement, emerging from a growing body of literature, that the earlier the initiation and experimentation with drugs, the greater the danger of addiction. Substance use at school often seems more acceptable and normative, and appears especially attractive to youngsters [34,35]. In summary, the relevant research and related literature reveal the following:

1. Smoking is more common among senior adolescents as compared to primary school children.
2. Drug abuse is more prevalent among adolescents who use non-prescription drugs than among primary school children.
3. Youngsters often obtain drugs by stealing from family members or pharmacies, or receive them from friends. A smaller number of teenagers obtain them in hospitals or markets.
4. The most frequently abused drug is marijuana.
5. Cocaine and heroin are less prevalent than marijuana.
6. In recent years, more youngsters have received information pertaining to drugs from their friends.
7. Most of the youngsters were persuaded to smoke by their peers. The least predominant influence is by parents.

These studies reflect the general trends of drug experimentation, initiation and use in many schools throughout the world. Many explanations are given to these phenomena and several are offered in this article. Since the initiation of drug experimentation begins at an early age (in primary school), numerous studies address this issue as a form of 'curiosity behavior'.

## Curiosity Killed the Cat

"Curiosity killed the cat" is a proverb used to alert against the dangers of avoidable examination, investigation, testing or experimentation. "But, satisfaction brought it back" is often offered as a challenging response. A more sophisticated way to address curiosity was provided by James [36].

'Curiosity' [...] is perhaps a rather poor term by which to designate the impulse toward better cognition in its full extent; but you will readily understand what I mean. ... In its higher, more intellectual form, the impulse toward completer knowledge takes the character of scientific or philosophic curiosity. ... Young children are possessed by curiosity about every new impression that assails them [36].

Curiosity is usually regarded as an advantageous quality for a fully developed human being, and is normally characterized by an early, though delicate, aspect of young children's orientation toward the world. The quality's influence on children is very similar to the force that motivates scientists in their research. Parvanno [37] described it as follows:

Children are born scientists. From the first ball they send flying to the ant they watch carry a crumb, children use science's tools-enthusiasm, hypotheses, tests, conclusions-to uncover the world's mysteries. But somehow students seem to lose what once came naturally"[37].

Since curiosity is a driving force in a child's development, it may further be associated with substance initiation and experimentation. Several important aspects related to curiosity and substance abuse should be noted in this regard:

## Why do Drugs Arouse Curiosity?

Children are exposed to the fact that many persons use pharmaceutical drugs, and thus interpret these as beneficial. Moreover, they do not possess knowledge about the harmful short- and long-term effects of drugs. Children are unaware of the dangers lurking in drug use, viewing narcotic substances as helpful, and thus the curiosity mechanism is set into motion. This process leads to the wish to explore drugs [38].

## Voluntary Exposure to Drugs

Children tend to expose themselves voluntarily to curiosity-evoking situations. When his/her arousal is low, the child seeks curiosity-inducing situations, and when arousal is high, s/he tends to regulate evoking situations in order to lessen curiosity. Once curiosity is evoked, the child will experience a strong drive to satisfy curiosity, and may therefore experiment with drugs [39].

## Circumstantial Factors in Exposure to Drugs

Curiosity results from feelings of deprivation, which are unpleasant and motivate information-seeking in order to be reduced. Situational determinants of curiosity cause a strong drive. Unsatisfied curiosity will usually intensify. Exposure to suitable stimuli can reduce or satisfy curiosity. Induction of motivation by curiosity is also related to drugs, as demonstrated in studies conducted on children in elementary school [40];

1. Children respond positively to new, strange, incongruous, or mysterious elements in their surroundings, by moving toward these elements, exploring, or manipulating them.

2. Children exhibit a need or a desire to know more about themselves and their surroundings.
3. Children scan their surroundings, seeking new experiences.
4. Children persist in examining and exploring stimuli in order to know more about them.

### Behavioral Factors Pertaining to Curiosity

Investigative and exploratory behavior is normally present in the daily environment, particularly in child behavior. Given the prevalent assumption that exploration is driven by curiosity, it is not surprising that, in the case of adolescents, activities and behaviors related to drugs are attributed to curiosity-driven conduct, including [41]:

1. Spontaneous exploration
2. Exploratory preference
3. Level of exploration

### Novelty Preference

The quest for selective new experiences is also considered a factor in the acceleration of curiosity, contributing to the initiation of drug experimentation. Numerous studies have mentioned novelty preference as a trigger for curiosity. The general agreement emerging from many studies is that children prefer new, unusual, intricate or compounded subjects of exploration [42].

### Preference for Uncertainty and Drug Experimentation

As said, curiosity is a gift—a capacity for pleasure in knowing. However, the gratification of curiosity frees us from unease rather than confers pleasure—we are more tormented by ignorance than delighted by instruction. In the case of drug experimentation, it is believed that there is an additional factor that facilitates substance initiation in addition to the gratification of curiosity [43].

All these factors are a part of the driving forces behind substance initiation and experimentation characteristic to children. Since children, adolescents and youngsters want to be familiar with object surrounding their environment and what will happen when they attempt to do different things with an object. They want to know why their friends or people behave the way they do. Their curiosity drives much of their knowledge, ability to learn and thinking through asking questions and examining what others do. Since curiosity has a central role in education, it's vital to figure out what educators can do to help students become more curious over time. Teachers can promote and increase curiosity in delicate ways by adopting the Storyline approach.

### What Can Be Done?

Anti-drug education dates back to the late-nineteenth century. Within the field of substance abuse prevention, there was little awareness that by 1901 some countries had passed legislation mandating some form of drug awareness instruction in public schools. School-based drug education programs began to operate during the 1960s drug crisis, and, at the same time, these teaching strategies also started to undergo some kind of assessment.

Until today, the intensely historical nature of the existing anti-drug campaign has inspired little effort to consult the combined knowledge garnered from past experience. This lack of forethought has ignored the long tradition of school-based drug education. It is particularly important to ascertain what informative instructions may be collected

from the acquired knowledge and examine in what ways they persist in shaping our understanding and evaluation of present-day prevention efforts.

Several findings may be extracted from the socio-historical overview [44]:

1. From its very beginnings in the 1880s, both the purpose and practice of school-based drug education has been largely determined by the dominant “Do Not Use Drugs” injunction, which still prevails today.
2. Over this span of time, opposition to the informational component of this “Do Not Use Drugs” educational efforts has come from two markedly different directions: a) Opposition to exaggerated and/or erroneous graphic portrayals of the consequences of any substance use, often referred to as “scare tactics”; b) The fear that informational efforts merely advertise the “forbidden fruit” to impressionable young minds; these opponents advocate the “Just Say Nothing” method instead.
3. Although alcohol and tobacco were the primary targets of early “Just Say No” prevention campaigns, following the repeal of Prohibition in the early 1930s, they were soon replaced by many of today's drug-demonizing tactics (used to combat i.e. heroin, cocaine and marijuana).
4. Although the “informed choice”/“harm reduction” (“Just Say No”) educational perspectives have always been present in some form, these efforts have only thrived for alcohol since the repeal of Prohibition, and for all drugs for a brief period during the 1970s.
5. Formal evaluation of school-based drug education began in the late 1960s, and continues to be constrained by its identification with the narrow goals of “Just Say No/Do Not Use Drugs” programs, often at the expense of valuable alternative harm-reducing approaches.

Many countries have adopted drug education programs that address the following issues [45]:

1. Ensuring that all children are taught about drugs in a regular manner as a part of the educational program.
2. Helping children understand the difference between use and abuse.
3. Helping children respect their own bodies and, in so doing, reduce the likelihood of drug abuse.
4. Boosting the children's self-confidence so that they may make wise and knowledgeable decisions about their lives.
5. Providing children with knowledge, information and understanding about drugs and the adverse impact they can have on their lives and on the lives of their families.
6. Presenting illegal drugs not only as a matter of legality, but also as an ethical dilemma that involves moral decisions.
7. Enabling the children to talk about the moral questions embedded in drug use, thus providing a secure atmosphere for youngsters to share their beliefs, thoughts and ideas.
8. Allowing children to exercise proper judgment when they encounter drugs, or when they see others who use drugs in an incorrect or improper way, or for a dishonest purpose.

The goal of drug education programs remains the same in most of the applied programs, but the activities used toward that end may differ [46]. A different approach toward a successful achievement of

the goal is to incorporate the general aim of age-adjusted education and knowledge into the activities of drug education programs. The “Storyline Approach” may serve as an effective method in every-day school activity.

### The Storyline Approach

The term ‘Storyline’ is used to define the plot of a novel, play or film. In the educational context, Storyline is a process that ties the curriculum to a particular study topic. The Storyline approach is a tool in the prevention of drug initiation and experimentation, constituting a different angle in the struggle against drugs in schools. One way of implementing this method is to incorporate the school environment into the prevention program, and thereby increase the efforts toward the enhancement of self-protection skills. This approach allows youngsters to expand their knowledge and insight, and thereby avoid potentially harmful situations, including drug initiation and experimentation. This approach utilizes natural resources like curiosity that is a driving force of adolescent and childhood. The school environment provides sufficient clues that could be used to incorporate a Storyline into drug education programs. The Storyline approach presents a constructive and a practical way to increase youngster’s awareness of harmful and dangers of drug initiation. By the use of collaborative story making, the educators and students interact to develop main characters and often the course of the story development. This process leads to a meaningful organization for the integration of drug initiation prevention in the curriculum. This educational process builds up a significant context for the application of students basic skills. It allows the development of structures that make available the freedom to develop in succession a rewarding climax and conclusion.

Students are encouraged to build up their own theoretical model first, that includes the specific key structures that play a significant role in drug abuse initiation. The next step in the Storyline approach to blend cognitive and affective learning that leads to creation of an attitude opposing initiation of drug abuse.

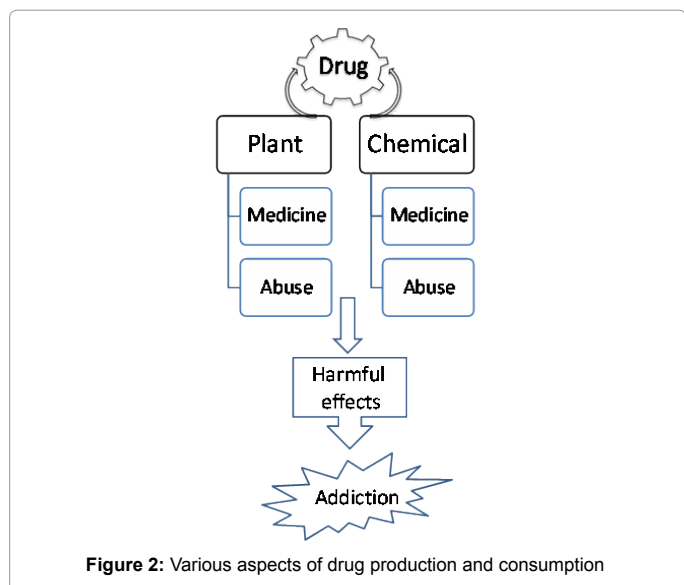
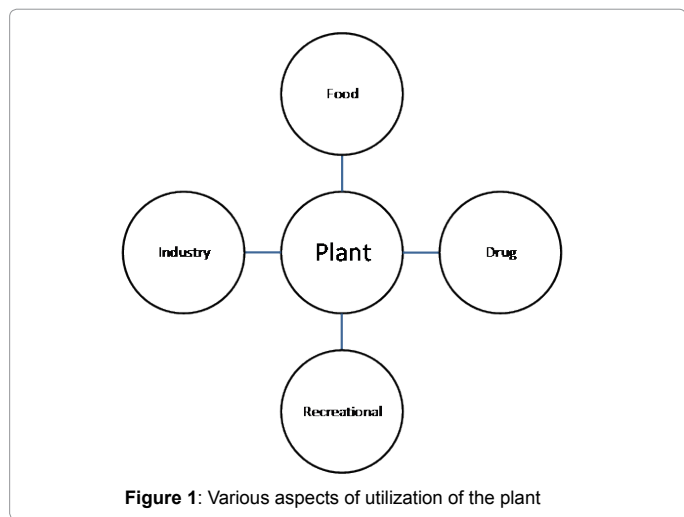
The following example can be modified, elaborated, divided into smaller segments or serve as a major school project for one year. The teacher raises a topic, an issue, or a theme that the pupils must experience, prepare and discuss. In this example, as shown in Figure 1, the topic is a “plant”. Plants are a part of the school environment or surroundings. The pupils can go on short exploration trips and discover plants in gardens or wherever they may grow. The next question will address the purpose of growing the plants. As shown in Figure 1, plants serve several purposes, including the production of drugs. This approach enables the pupils to investigate various aspects pertaining to plants, and encourages exposure to different uses of plants. The pupils also learn that plants are used by pharmaceutical companies to produce numerous types of medication to treat various diseases. This process allows the pupils to witness “the story of the plant” as well as tell their own story. Thus far, the plant’s story has only consisted of positive aspects (Figure 1).

The other sides of the story comprise of some negative results that may emerge when the drug is abused. As shown in Figure 2, the same compound produced from the plant or manufactured artificially by pharmaceutical companies can be put to ‘good’ use, but may also be abused. At this point, the pupils are exposed to the potential harms of drugs. The first step is to expand the pupils’ understanding pertaining to various bodily functions – under normal conditions as well as in a diseased state. A simple example is normal body temperature and the changes it undergoes during illness. The amount of valuable knowledge

children gather from their own experience and the stories they are happy to share are always surprising. The question naturally raises a discussion pertaining to possible treatments to reduce one’s body temperature. At this stage, the pupils can provide some information about various types of medicine and how are they packed.

The next question could address the consequences of excessive consumption, which may easily be demonstrated with the example of excessive chocolate consumption. Children usually love chocolate and are well-aware of the implications of over-consumption. At this point, the parallel between eating too much chocolate and substance abuse should be emphasized.

This plan encourages the child’s intensive involvement in his/her environment. Moreover, during their exploration, the pupils incorporate skills that encourage them to make the right decisions-in their daily activities and for the future. It is, moreover, essential to involve parents in the program as their inclusion increases the pupils’ sense of importance and enhances their mobilization. Each part of the above example could serve as a chapter in the story that is gradually constructed by the partnership of pupil, parents and teacher (Figure 2).





## The End of the Story

Fairytales often begin with an unhappy atmosphere of abuse or dreadful calamities, and these are eventually resolved to enable the protagonist's happy ending. *Cinderella*, for example, tells the story of a miserable girl:

Unhappy she was, for her mother was dead, her father had married another woman, a widow with two daughters, and her stepmother didn't like her one little bit.

### Cinderella's fortune changes

[S]he seated herself on a stool, drew her foot out of the heavy wooden shoe, and put it into the slipper, which fitted like a glove. And when she rose up and the King's son looked at her face he recognized the beautiful maiden who had danced with him and cried, "That is the true bride!" [47].

The dramatic events that alter Cinderella's fate are followed by a happy ending, and Cinderella joyfully leaves her home to live happily ever after with her prince.

Unfortunately, the drama of drug abuse has not been resolved and many stories of initiation and experimentation do not have a happy ending. In spite of the tremendous efforts invested in the war against drug, youngsters often fail to see that the risks of drug use far outweigh what they view as benefits. Moreover, drug use appeals to youngsters because it seems enjoyable or is attributed with the power to resolve problems [48,49].

The Storyline approach seems to be an effective way of passing the word about the dangers and harms of drug use, and may help prevent some of the most destructive behavioral and health problems it generates. In addition, the approach may constitute a natural avenue for school education programs. The storyline approach is a normative educational program that significantly delays the onset of alcohol and cigarette use by pupils. However, the method has some drawbacks: The Storyline approach does not eradicate drug problems, which will inevitably continue to reappear. Therefore, drug prevention programs must be integrated into any school's educational philosophy and constitute a cardinal component in the annual study program.

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