CREATING CULTURES FOR LEARNING: TOWARDS A NEW PARADIGM FOR EDUCATION

by

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A thesis submitted in conformity with the requirements for the degree of Master of Arts
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0-612-50410-7
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Master of Arts, 2000 
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ABSTRACT

The challenge of educating for a knowledge society is the focus of this thesis in the context of technology and learning and how elements from both can support cultures for learning on the World Wide Web. Postman's three-staged cultural framework serves as a backdrop against which institutionalized educational practice and the learning theories that have impacted on it are charted. Similarly, instructional technology is reviewed as it has progressed to the currently popular constructivist model. The electronic learning environments that have evolved from this progression and their flexibility in integrating a diversity of learning principles is seen as a powerful tool for helping to develop the creative thinkers that will be required in the new millennium. Based on this premise a first iteration design that was implemented for a school-community project, the Health Promotion Learning Environment, is presented as one design experiment for attempting to create a culture for learning.
ACKNOWLEDGEMENTS

The last five years spent at the Ontario Institute for Studies in Education have been challenging and rewarding, and I feel extremely fortunate to have had the opportunity to study and work with the remarkable group of professionals in the department of human development and applied psychology.

Much appreciation to Dr. Marlene Scardamalia who introduced me to the wonderful world of learning and technology and gave me my start.

My gratitude to Dr. Dan Keating for his support and trust over the last three years and for giving me the leeway to push myself to the fullest.

Thank you to Dr. Earl Woodruff for his input and helpful direction.

To my family, whose patience and support have been overwhelming. I know it has been a challenge for all of us and I cannot thank you enough for letting me pursue my dreams and aspirations.
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I. INTRODUCTION

The Role of Education

The capacity to learn, and to educate is fundamental to the very existence and perpetuation of homosapiens. Both can occur instinctually or intentionally. At an instinctual level, this behaviour may be witnessed in the complex parent-offspring relationship. The nurturing on the part of the parent and ability to adapt on the part of the offspring are essential to the survival of the species. Primates and other animals share this facility as well. At an intentional level, however, only humans leverage their predisposition for learning to structure education for the achievement of pre-determined ends. Consider the following examples; the passing down of healing arts knowledge from one generation to another, the training of a young aristocratic boy to be a future king, or the establishment of training courses for computerized business applications to be utilized worldwide. Whether innately or intentionally generated, education exists as a powerful mediator of knowledge between individuals and society.

The purpose of this thesis is to examine intentional educational practice in light of the evolution of the learning theories and innovations in instructional technology that have come to bear on it. Although present day schooling still adheres to a traditional methodology (Bereiter, 1992), it will be argued that there is a
sufficient knowledge and expertise base upon which a new forward thinking paradigm for pedagogy can be established.

This notion is developed using Postman's (1992) cultural model to introduce an overview of the role of education and how our current situation calls for a restructuring of our educational approach. The second and third sections provide a critical review of the literature on learning theory, extract a set of core learning principles, and discuss how these principles have influenced contemporary educational practice. The last section addresses the question of how the extracted learning principles might be integrated into educational technology by presenting a design experiment that was implemented at the intermediate-senior level (grades 7 and 11) for health studies.

The development of intentional educational practice can be charted using Postman's (1992) historical framework of culture. Postman labels three stages of man's existence -- pre-literate, technocracy, and technopoly -- to describe how tools have progressed from being separate from the culture, to bidding to become the culture, to redefining the culture. Using these same stages, one can also note the different educational approaches that have emerged as individuals and society have had to adapt in the face of these changes.

Until approximately the 17th century, early pre-literate or tool-using peoples commonly followed a holistic approach. Having no formalized educational system as such, children would observe, be guided, and eventually emulate the ways of their parents, relatives or other adults around them (Gardner, 1996). If more
sophisticated skill or specialized expertise was required, a formal arrangement such as a negotiated apprenticeship situation might be developed, resulting in sending a youth away for an intensive duration to work with and learn from a recognized master. This latter form of training was popular well into the 16th century and has more recently resurfaced under the heading "cognitive apprenticeship" (Perkins, 1998; Bereiter & Scardamalia, 1992) as a viable and effective learning model that compliments one intrinsic human aptitude for learning with the guidance of an expert.

Scholarly institutions of a religious nature have existed to serve a small elite for centuries, but it was a rise in commerce in renaissance Europe and the consequent need for higher levels of literacy that led to the establishment of secular schools for the masses. This second stage, Technocracy, marked the beginning of an age where past traditions were questioned, and inventions such as the clock and printing press influenced the people's worldview and effected major changes in society. Two streams of formation emerged, specialized and practical. Specialized schools, which offered an education above and beyond basic literacy, aimed at producing individuals with certain principles, values or behaviours needed for positions in the clergy, military, or leadership fields. Practical or functional schools focused on the transmission of skills in specific literacies such as reading, writing, notation, math, and accounting (Gardner et al., 1996).

The educational institution as we know it today did not become entrenched as an independent entity until the 20th century (Suppes, 1991). Prior to this,
however, the creation of a new technology, the printed book, meant unprecedented public access to knowledge, and engendered new systems needed for managing the proliferation of information that ensued. This became a primary occupation of the new educational system. Dubbed "technocracy's first secular bureaucracies," schools became "structures for legitimizing some parts of the flow of information and discrediting other parts" (Postman, 1992, p. 186). The result was the design and implementation of a curriculum oriented towards the transmission of skills and knowledge deemed requisite to train productive members of society.

This model worked relatively well through the late 1800s to mid 1900s, particularly in America where progress and opportunity abounded and a belief in education as a democratic as opposed to the hitherto meritocratic right pervaded the socio-political agenda (Gardner, 1996). The florescence of innovation and creativity increased the need for more elevated levels of literacy and the educational institution responded by establishing a multitude of schools aimed at shaping individuals for just about every strata of life.

In the present third stage, what Postman (1992) calls Technopoly, technology achieves unimagined levels of sophistication and infiltrates virtually every aspect of our lives. Today we live in a media age. The camera, radio, television, computer, and last, but not least, the Internet have produced an information explosion that has made the traditional information management paradigm obsolete. Schools, colleges, and universities still continue to thrive and the mass level of education is higher that it has ever been. Nevertheless, on an increasing scale their effectiveness is coming
progressively into question as the number of high school dropouts escalates, post secondary degrees fail to guarantee employment, and once-secure jobs markets diminish.

Rifkin (1997) describes this phenomenon as resulting from a continuous cycle of displacement and assimilation that society has experienced as it has progressed from the agricultural to industrial to service sectors. For instance, when tractors took over the work that previously could only be done by manual labourers, many of the agricultural workers were able to find work in the expanding world of industry. Similarly, as automation increasingly produced a labour surplus in industry, the service sector became the next arena for gainful employment.

Unfortunately, this reprise is to be short lived. According to Rifkin, technology continues to advance at an exponential rate and is already well established in the services domain, as seen in such areas as banking institutions that are closing up smaller branches and switching over to automated tellers. Furthermore, the oncoming "knowledge sector," predicted to consist of a relatively small elite group of knowledge innovators, educators, computer scientists, and entrepreneurs, will not be able to accommodate the vast numbers of people that will be forced into the job market. For the first time in human experience the masses will be displaced, made redundant, and only a small percentage of the populace will be afforded a secure existence.

Keating (1996) acknowledges that current dramatic shifts in economy and social change present complex challenges for populations as a trend appears to be
favouring the division of society into the "haves" and "have nots." Nevertheless, he counter-poses that progress can be made if our current educational system takes the necessary steps required to prepare the mass population for the next millennium. What he suggests is that the system broaden its scope to consider both the history of human development and the latest views in pedagogical practice in order to develop new models for learning that can take us forward into the knowledge age.

It is clear that the time has come to reevaluate educational practice in order to meet the demands of the 21st century, particularly if we are to attain a proper balance where both individuals and society can thrive. Fortunately there are some rich resources to look to. Advancements in the disciplines of human development, educational psychology, and technology and learning offer insight into how we can use what we know about how humans learn to restructure our curricula and create cultures for learning.

It is the intent of this thesis to investigate this theme of cultures for learning by elaborating a design experiment (Brown, 1992) of a virtual environment that uses a recent innovation, electronic learning environments, and integrates current leading-edge theories of learning. Before doing so, however, I start by drawing out some key principles of learning from the literature and discuss how they have impacted on contemporary educational practice and instructional systems design.
II. THEORIES ON LEARNING

The act of educating presupposes a belief in a capacity to learn. A parent corrects an undesirable behaviour in a child, and a master craftsman demonstrates an intricate carving procedure to an apprentice. Both parent and master hold the assumption that the learners are able to acquire procedural knowledge or "know-how." In this "traditional" view, the educator's experience has brought about an understanding that learning is a natural phenomenon and that competency, or in the latter case skill mastery, develops through observation, imitation, and practice (Bruner, 1996). Astington and Pelletier (1996) label this as a Maturationist or Nativist view. The teacher expects that the learner has an innate ability to learn how to do certain things.

This model of education assumes that there is a fundamental dynamic between educator and learner which affects, and may even determine, the outcome of the learning situation. It encompasses not only what the learner is actually able to do, but also what the educator thinks that the learner is able to do. Put into a broader perspective, a culture's everyday beliefs about the mind, or folk psychology, generate theories about common beliefs in what teaching and learning is about, or folk pedagogy (Olson & Bruner, 1996).

Our Western cultural understanding of the human mind, modes of learning, and anticipated behaviour originates with the ancient Greek philosophers. With
respect to the progression of intentional educational practice, however, a profound shift in folk and pedagogical psychology takes place during the technocratic period. One main reason for this is that it marks the bringing together of two important occurrences, the establishment of the educational system and the development of the field of psychology. For psychology, looking to justify itself publicly as a viable scientific discipline (Keil, 1996), this presented an unprecedented opportunity to apply behavioural theory, previously limited to animal experimentation, in relatively controlled settings to human subjects. For the fledgling educational institution in search of a pedagogical paradigm, it was a chance to implement the latest innovation, behaviourism, as a methodology for creating productive members of society.

The first popularized experimentally based theories of learning employed a behaviouristic model, but other diverse perspectives such as Gestaltism, cognitive science, humanism, and socio-culturalism have also made significant contributions. This section explores the philosophies of these different approaches as they have evolved since the turn of the 20th century. Their key theories are then extracted into a current set of learning principles that it will later be argued provide a positive contribution to the heretofore stated challenge of creating a paradigm of education for the next millennium.
Behaviourism

The scientific structure of behaviourism is based in a methodology of observation and experimentation called Empiricism (Reber, 1985). However, rather than adopting the empirical conception of mind as being similar to a blank tablet or white paper upon which information and experience can be written, these modern behaviourists pursued experimental work that could be verifiable, replicable, and objective, moving away from the intangible, non-measurable, and non-observational study of consciousness (Woolfolk, 1998). The new metaphor for the mind became that of an impenetrable black box and emphasis was put on the environment as being the key stimulus in determining human capabilities (Gardner et al., 1996).

The behavioural model in play here is S→R or, stimulus leading to a resulting response or behaviour. Learning is defined as a relatively permanent change in behaviour, or the development of an ability to respond differently based on either past experience/responses or similar experience. The result of the experience is the ability to carry out a task or understand a concept that would not previously have been possible or to do something better (Benson & Grove, 1998; McGeoch, 1942; Vander Zanden, 1985). In addition to its empiricist roots, behaviourism also derives from associationism, the study of how ideas are linked together and the search for laws that describe and explain behaviour (Johnson-Laird, 1988). Given this context, learning can also be seen as the construction of associations or the process whereby individuals establish an association or linkage between two events (e.g., association between hot stove and getting burned).
These definitions may hold slightly different nuances depending on the
behaviourist, but there are four factors that are generally agreed upon as integral to
the learning process:

**Relative Permanence:** This means that the learning or change in behaviour is not due
to momentary changes from fatigue satiation, habituation, receptor and effector
changes, or purely sensory phenomena such as sensory adaptation etc. (Hinder,
1934; McHose, 1970).

**Response Potentiality:** This is the allowance for latent and incidental learning, and
recognition of the learning-performance distinction. In other words, learning is a
hypothetical construct or refers to some kind of activity or state of the organism
which we infer from behaviour while performance is observable, empirical, and
measurable. Performance then is the translation of learning into behaviour usually
through the involvement of motivation (Houston, 1976; Kimble, 1961; Spence, 1951).

**Reinforcement:** This is the notion that learning requires reinforcement, otherwise
extinction will occur. Reinforcement is the process whereby one event strengthens
the probability of another events occurring. This process, called conditioning, was a
crucial component of Pavlov’s classical training, and was integral to Skinner’s

**Practice:** The belief is that for learning to occur, the behaviour must be emitted and
repeated sooner rather than later. Some behaviourists considered practice as key to
improved learning to the extent that one definition of learning is that it is a change
in performance as a result of practice (McGeoch, 1942).

B. F. Skinner as one of the first behaviourists to extend his work to human
behaviour, is often cited for his research in education and child rearing. Extending
the S->R model to include reinforcement, he asserted that the humans behave, or
operate, on the environment in lawful and predictable ways in response to the
impact of external forces (Benson & Grove, 1998). He also solidified ideas about the
relationships between time, response, reinforcement, and punishment and reward.

These concepts formed the basis of some concrete methodologies that were
incorporated into the classroom. One example of this is the 3 Stage Training Method:

- define goal (Terminal behaviour) teacher states the behavioural objectives;
- define start (Entering Behaviour) teacher states the task he wants to achieve; and
- positively reinforce each step (Increment) in the desired behaviour while ignoring all others. Positive Reinforcement is seen as more desirable as opposed to negative reinforcement which results in avoidant behaviour, or punishment which is believed to be ineffective.

According to Benson and Grove (1998) other contributions to education have come from Thorndike, Bandura, Rotter, and Brodgen. Thorndike concurred that repetition and reward lead to successful outcomes. His findings indicated that repetition strengthens learning, the basis of rote memorization, and even more notably that if the student finds the sensation pleasurable, the action will be repeated. His work using learning curves also contributed to the idea that learning could be measured. Rotter’s theory of locus of control was an important development in that for the first time there was a consideration of flexibility of control. Internal locus suggested that the individual had some voluntary role while an external locus described the more traditional behavioural model of the environment having complete control over an individual’s behaviour (Reber, 1985). Bandura, like Rotter, also offered a progressive twist in that his experiments suggested that a person’s behaviour could impact that of another individual (i.e. one could learn vicariously). Thus, one could ostensibly influence a child’s behaviour by modeling the desired behaviour (Woolfolk, 1998). Other themes explored, such as Brodgen’s (1951) three stages for categorizing learning phenomena: acquisition,
transfer, and retention, and the existence of different kinds of learning (Johnson-Laird, 1988) continue to be of interest to some educational psychologists.

Based on such work, institutionalized education adopted the premise that behaviour could be predicted, controlled, and altered through direct instruction and by manipulating the classroom environment. Repetition and rote learning were the order of the day, and it became popular belief became that intelligence could be measured by speedy correct responses on the part of the learner. This set the stage for the imminent rise in the development of instruments for measuring intelligence and the currently used standardized testing methods (Bugelski, 1959; Gardner, 1985). The teacher represented the authority figure with the knowledge and the control, modeled superlative behaviour, and was responsible for inculcating the knowledge into the student. The black box metaphor gradually transmuted to that of "mind as a container" with the student as passive recipient. This model, labeled Behaviourist instruction (Astoning & Pelletier, 1996) or the transmission approach, still prevails to this day.

**Gestaltism**

While behaviourism flourished in North America, Germany was pursuing its own alternative theories of learning. The Gestalt movement argued for the importance of mental processes or consciousness, presenting the mind as being active and constantly searching for meanings. One extension of this view is the Insight or Cognitive Learning theory otherwise known as the "Ah-Ha!" phenomenon. This occurs when an apparently spontaneous understanding of a
situation or "insight" takes place (Vander Zanden, 1985). Thus, in contrast to behaviourism's narrow or non-existent view of the mind and its emphasis on environment, the Gestalt view was that people actually learn by thinking and not just by imitation or external conditioning.

Gestaltism is also known for the saying, "the whole is greater than the sum of its parts." Benson and Grove (1998) cite Wertheimer's model for the classroom as exemplifying this perception of "wholeness." In his book, Productive Thinking (1945), Wertheimer suggests a set of criteria by which the teacher can create an entire learning environment supporting a holistic view of learning. These include providing stimulating activities, encouraging creativity instead of mechanical repetition, and focusing on the general principles of problem solving vs. a focus on memorizing details. The role of perception in how we make sense of patterns in the world around us subsequently stands as a core focus in the information processing principle of pattern recognition and assigning meaning to sensory stimulus (Woolfolk, 1998).

The Cognitive Movement

It was not long before the behaviourist S->R model came under attack for its limited one-way perspective in America as well (Gardner et al., 1996). The invention of intelligent machines along with development in other research disciplines led to the proposition that individuals are able actively to evaluate stimuli and respond accordingly, in a flexible manner, reflecting the existence of mental maps or schemes guiding their thought and actions. Change, it was argued, manifests itself not so
much in external behaviour but rather in an internal change in existing schemata or

By the late 1950s the rise of information processing systems and technologies,
including the computer, had a major impact on cognitive research. The age-old
debate of whether or not there could be a science of mind was once again on the
table and a parallel was drawn between mind and computer, with the mind
standing to the brain as the program (symbolic instruction) stands to the computer
(Johnson-Laird, 1988). Human cognition was defined as being a highly
sophisticated process by which sensory input is transformed, reduced, stored,
recovered, elaborated, and used (Dole & Sinatra, 1998).

A significant contributor to the study of the impact of inner mental activity on
human behaviour was Jean Piaget. His model of cognitive development proposed
four qualitatively distinct periods in the growth and maturity of an individual’s
ability to think, and to gain knowledge and awareness of one’s self and the
environment (Sigel et al., 1997; Woolfolk, 1998). His belief was that thought
develops from “internalizing one’s own actions” and evolves as the child interacts
with the environment. Furthermore, he presented the notion that the child plays an
active role in the acquisition of knowledge. Likened to a scientist, the child
constructs ever more powerful theories of the world, acting upon it, transforming it,
modifying it, literally changing himself through acting (Laird, 1988; Case, 1985; Dole
& Sinatra, 1998). This became the foundation of a movement that is still extremely
pervasive in education and instructional technology today called Constructivism.
Piaget was one of the first to introduce the notion of the child as central to the learning process, but he too is not without critics. Gardner (1985) counter-poses that developmental stages may not stem from a single intelligence rooted in logical-mathematical structure as Piaget suggests, but rather encompass a number of different kinds of intelligence. Other claims are that his model does not take into consideration the differences between cultures or even between individuals within a culture (Bruner, 1996). Piaget also saw cognitive development as depending on an organism's maturation or readiness for undertaking certain kinds of activities, meaning that one cannot by-pass any stage of in the developmental process.

**Socio-Culturalism**

The notion of constructing one's own knowledge and cognitive structural development are also fundamental to Lev Vygotsky's research repertoire. However, where Piaget put the emphasis on interaction between individual and environment, Vygotsky believed in the primacy of social interaction, particularly in the development of higher mental functioning (Wertsch, 1985). There are two differences to Piaget that have significant implications for pedagogy. First, as social animals, humans do not learn in isolation; from the time of birth our development is contingent upon the engagement with significant others in our milieu (Vygotsky, 1978). Although we do recreate reality for ourselves in a process called internalization, until we have developed the skill and control of mental functioning to do this independently, we learn vicariously through our social interactions benefiting from the expertise of those around us. As Bruner (1985) puts it, learning
is not a process whereby “a lone child struggles single-handed to strike some equilibrium between assimilating the world to himself or himself to the world” (p. 90).

Secondly, Vygotsky believed that one could push the boundaries of Piaget’s developmental model and achieve a higher level with the aid of a more experienced facilitator or significant other. His model introduced the concept of the zone of proximal development (ZPD) or, the zone between the level of problem solving an individual can do in isolation and the level of problem solving the individual can do in social situations involving other, more knowledgeable individuals (Wertsch, 1985; Gardner et al., 1996). According to Vygotsky (1978) it is the dynamic between individuals and society that allows us to ultimately manipulate our environment so as to reach a higher level and attain more conscious control (Bruner, 1985).

Both Piaget and Vygotsky fit into the Constructivist view (Astington & Pelletier, 1996). Although Piaget emphasized individual interaction with the environment, and Vygotsky saw development as being socially mediated, both adhere to learning as a development of understanding that occurs as the individual’s “previously acquired cognitive structures become coordinated and form new superordinate structures” (Astington & Pelletier, 1996, p. 609). Thus, what can be taken from Piaget and Vygotsky collectively is an understanding of the changes in thinking from the learner’s perspective (Keil, 1996). Vygotsky additionally provides the ZPD tool for how to apply this understanding to assist learners in developing their full potential.
Humanism

This perspective brings to the forefront the uniqueness of the human condition and looks to the maximizing of human potential for self direction and freedom of choice (Vander Zanden, 1985). Thus it represents a major paradigm shift in that the locus of control is internal to the individual. Humanism, like cognition, socio-culturalism, and Gestaltism, is organistically oriented when compared to its behavioural mechanistic counterpart. It incorporates elements from each of these perspectives and criticizes other aspects, but the fundamental goal is that of self-actualization as illustrated in Rogers' model of the hierarchy of needs (Benson & Grove, 1998).

According to humanism, behaviourism and cognitivism fail to take into account the behaviour that results from the social and emotional contexts of the learner's experience (Gowin, 1981). In support of cognition, humanists concur that learning parallels an encoding process whereby the organism uses symbols for comprehending and making meaning of material that is presented to it. Contrarily, limitation in learning stems not from Piaget's imposed ceiling in cognitive capacity, but rather from a temporary inability or "non-readiness" to acquire any information that is beyond the learner's current experience or perceived usefulness. Individuals have an unique consciousness that is shaped by their own thoughts, values, feelings, attitudes and styles of learning. Further, these characteristics selectively filter what the individual sees or hears. Therefore, only knowledge or information which has personal meaning or relevance can be acquired and used (Novak & Gowin, 1990).
One argument for the recognition of individual differences or uniqueness in the way we educate stems from this philosophy.

Gowin (1981) describes learning as a shift in the quality of our experience as we move from ignorance to a state of knowing or more complete understanding. Often after we learn something new we change our behaviour in certain ways and may modify the way we feel, think, and act. On this basis, education should provide learning experiences that are meaningful and that involve discovery as opposed to the more common model of knowledge reproduction (Scardamalia & Bereiter, 1993). It should also provide a basis for understanding how new knowledge builds on existing knowledge and encourage the application of new understanding to other contexts (Vander Zanden, 1985).

Recent Developments

Before closing the discussion on learning theory it is important to mention some current research which unifies some of the concepts found in cognitivism, socio-culturalism, and humanism and extends them towards a new folk pedagogy. In his model of mind and education, Bruner (1996) summarizes the progression of folk pedagogy in the following manner. The child is seen as a) an imitative learner (apprenticeship method), b) learning from didactic knowledge (behaviourism), c) a thinker (cognition, socio-culturalism), and finally d) as knowledgeable (humanism). The last two models of mind have spawned research investigations that are considered to have important implications for education (Bruner, 1996, pp. 57-61).
Intersubjectivity: sets the tone for the teacher-learner relationship which is to be considered as a "mutual meeting of minds".

Theory of Mind: provides insight into how a child comes to understand the desires, beliefs or "intentional states" of another individual.

Metacognitive Strategies: encourage reflection about one's own mental processes and is seen as requisite for any true knowledge advancement to occur.

Collaborative Learning: not only supports our social tendencies but also provides children the opportunity to explicate and revise their beliefs through discourse.

In the last view of the child as knowledge manager, the child is able to distinguish between personal knowledge that is in his head, and knowledge that is outside, or "what is taken to be known by the culture." Popper's model of world 1 (physical), world 2 (the mind), and world 3 (objective knowledge) is also incorporated into the work of Scardamalia and Bereiter (1994, 1996). Their perspective is that although learning is an internal phenomenon, i.e. it takes place in world 2, development of understanding can only take place when the learning activity, what they call knowledge building, is focused in world 3. It is during this outward engagement in the world of objective knowledge that the learner can participate in a communal discourse and contribute to the advancement of knowledge.

There are a couple of important considerations to be taken from these works. First, there is an onus on developing cognitive capacities that lead to the ability to build knowledge. Scardamalia & Bereiter (1996) refer to this as "creative thinking" or making connections in world 3. This coupled with the ZPD model and Bruner's educator guidelines for viewing the learner, compliment the humanistic objective of
assisting one in their quest for self-fulfillment. Clearly Bruner, Scardamalia, and Bereiter are responding to the challenge of preparing the knowledge thinkers and managers that will be required for the knowledge society of the future. Further to this, however, their work extends the ideals of self-actualization towards the ultimate advancement of culture.

**Key Principles of Learning**

<table>
<thead>
<tr>
<th>Behaviourism</th>
<th>Gestaltism</th>
<th>Cognitivism</th>
<th>Socio-Culturalism</th>
<th>Humanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviour can be conditioned based on pain/pleasure principle</td>
<td>“Wholeness of perception”</td>
<td>Mind as pattern recognizer</td>
<td>ZPD educational tool, Culture = intra/interpersonal interaction</td>
<td>Human uniqueness</td>
</tr>
<tr>
<td>Practice, pleasurable reinforcement</td>
<td>Considering the whole not just the sum of the parts</td>
<td>Development of understanding through creating/building knowledge in W3, Meta-reflection</td>
<td>Collaboration, Participation in communal discourse</td>
<td>Accepting differences, Governing own learning &amp; making it meaningful, Being the best you can be</td>
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In this section I have looked at the more prominent theories of learning that developed in the 1900s with the advent of the establishment of mass public education and research developed primarily through the discipline of psychology. Now that some key principles of learning have been outlined, the next issue to be addressed is how they have impacted on contemporary educational practice.
An ongoing debate in educational practice focuses on which learning theory and methodology provide the best foundation for proper enculturation into society. On one hand, mainstream public education has adhered to a scientific experimental approach, while on the other, the remaining learning theories have developed as diverse independent pursuits under an umbrella heading along the alternative stream. In these times of displacement and transition, both streams are challenged as public speculation questions the effectiveness of current pedagogy.

Regardless of these paradigmatic variances, it is proposed that technology more than any single learning philosophy has the potential to reform our current perceptions of educational practice. Digitized media, particularly information technology, has set in motion a trend that will permeate every aspect of the human experience (Postman, 1992). On this premise the latest advancements in instructional technology will also be explored, particularly the new generation of constructivist electronic learning environments which it will be suggested are flexible enough to incorporate all of the learning perspectives.

Traditional Stream

As public education has matured in a behaviourist environment, it has become quite adept at producing individuals for professions and jobs whose membership is determined by "measured intelligence." The basic premise is that
learning and intelligence can be systematically acquired and measured through an assortment of standardized achievement tests (Gardner et al., 1996). Tapping into our predisposition towards external conditioning, this transmission method has worked well for those adaptable students who have achieved a high enough standard to be able to choose careers in medicine, law, and other performance-oriented professions. The rest, for the most part, have been streamed into other kinds of work. Goodland (1994) points out that teacher-student roles and relationships define a set of ideals of what constitutes a good student in the traditional environment. Socialized from very young age to accept teacher authority and whole class learning situations, the good student is one who passively accepts, conforms, complies, and competes for individual reward.

One may argue that this methodology has worked well for the last century, but dramatic shifts in our work paradigm due to corporate downsizing and restructuring mean that society fails to offer any guarantees of future livelihood even to those who successfully work through the system. Critics also insist that this approach will not provide a sufficient base for the building of an information society. Schools should not be in the business of producing automatons but rather self-directed individuals with reasoning and thinking skills. The implication of a knowledge-based economy is that wealth generation depends on creating and transforming knowledge (Scardamalia & Bereiter, 1996). Furthermore, the collective capabilities of the larger population, and not individual achievement alone, will be
required to face the massive economic and social change that we will be experiencing as we move to a knowledge-based global society (Keating, 1996).

Olson and Bruner (1996) assert that as long as public schooling maintains an externally oriented folk pedagogy, where the teacher or expert decide the learning agenda and impart knowledge to a passive recipient, we will continue to perpetuate a system that focuses on product rather than process. Following a reductionist approach where curriculum is broken down into small isolated subjects and removed from a socio-cultural or historical context (Salomon, 1995) further fails to embed thinking and learning in meaningful contexts and activities (Kuhn, 1990). In addition though we may live in a democracy, Chamberlin (1992) suggests that political and social awareness are not sufficiently cultivated. He states,

The low sense of political efficacy and external locus of control nurtured in schools by roles of passivity and acceptance of authority likely contribute to the perpetuation of a polarized society in which active citizenship and political influence are unequally distributed on class and race lines (p. 164).

Commentary of this nature is as old as institutionalized educational practice itself. In 1969, the Hall Denis report recommended a set of criteria for offering the best learning situation to young people in Ontario's public schools. Though it supported certain aspects of the behaviourist approach such as practice and
reinforcement, it also stressed the importance of educating the whole child and creating learning environments that respect the child's individuality and allow for learning through discovery, thinking, investigation, and reflection.

Some thirty years later in 1996, a Royal Commission for Learning drew on the collected expertise of professionals in human development, education, and cognitive science. It stated the purpose of education as being to ensure for all students the development of literacies such as reading writing, and problem solving as well as developing understanding across a variety of subject domains. In recognition of the complexity and uniqueness of the learning experience, it stressed the importance of the whole reality of the child and offered suggestions such as increased school-community alliances, early childhood education, teacher development and accountability, and using the full potential of technology as some possible steps towards educational reform (Begin et al., 1994). Unfortunately these efforts and a host of others seem to have had little overall impact. Thus, the question for many is why is it that our educational institution seems so reluctant to respond.

Why Traditional Schooling is resistant to change

Keating (1995) speaks of the sluggishness to change as being characteristic of all large bureaucracies, not just the educational system. Another factor is the profound influence of public opinion on the political agenda in respect to education. Currently there is a call for “going back to basics” — a return to the old rote learning and repetitive means of education — in the belief that at one time in the past we had education without problems. The reluctance of the institution to change coupled
with misinformed popular opinions about how learning is best achieved result in a slowness to adapt and differences of opinion as to what educational change should actually entail. McLuhan (1967) put it in this perspective:

The youth of today are not permitted to approach the traditional heritage of humanity through the door of technological awareness. This only possible door for them is slammed in their faces by a rear-view-mirror society. When faced with a totally new situation, we tend to attach ourselves to the objects, to the flavour of the most recent past. We look at the present through a rear-view-mirror. We march backwards into the future (p. 74).

Postman (1971) and Bereiter & Scardamalia (1996) cite assimilation as a causal factor in the resistance to change. Postman speaks of new language such as discovery learning and learning how to learn as attempts to modify old paradigms gone astray. Instead of bringing about any change, the concepts are simply grafted onto existing concepts. Similarly, our container metaphor for the mind absorbs new concepts such as constructivist learning resulting in a diffusion of the innovation and subsequent perpetuation of the old paradigm. Commitment to these outdated conceptions of mind further work inadvertently against the child’s welfare (Bruner, 1996) as they negate the importance of maturation, genetics, environment, and the uniqueness of interpersonal and intrapersonal experiences on the psychological development of the learner (Rutter & Rutter, 1992).
Such highlights of the limitations of traditional schooling have served as powerful arguments in support of other methods of education. The following models exemplify some attempts at such kinds of thinking towards alternative ends.

**Alternative Stream**

The history of non-traditional education in North America begins just prior to the centralization of the public school system around 1870 (Suppes, 1971). Although the state run schools opted for the behavioural model, the progressive movement as cultivated by individuals such as Horace Mann, Brook Adams, and John Dewey advocated a learner-centred approach geared towards the recognition of the individual, fulfilling one’s own potential, experiential vs. subject-based learning, and an appreciation for the individual’s rights in a democratic and socially conscious society (Day & Day, 1994). The progressive movement therefore openly disputed the role of education as going beyond just training citizens to become a cog in society’s larger capitalist agenda to considering the individual’s personal health and well being. These humanistic and democratic values set the tone for the alternative stream and continue to be dominant themes.

One school that is known for its radical departure from the traditional method is the Summerhill School. Founded by a husband and wife team in 1921 in England, the school still stands today as an example of a system where education is tailored to fit the individual child. This means providing a self-governing environment that stresses freedom and play, and education without force or overt authority. Weekly general meetings where teachers and students have equal votes
convene to deal with school business and classes are non-mandatory. Summerhill’s philosophy is based on the following assumptions (Neill, 1960, pp. xii-xiv):

- children are inherently good and are born with potentialities to love life and be interested in life;
- the aim of education and life is to work joyfully and find happiness;
- intellectual development alone is not enough there must also be consideration of the child’s emotional development;
- education must be geared to the psychic needs and capacities of the child;
- discipline, dogmatically imposed and punishment create fear which results in hostility which is harmful and thwarts sound psychic development;
- freedom does not mean license; respect must be mutual;
- teachers must be sincere;
- healthy human development involves learning to face world as an individual, and using all one’s powers to find union with the world rather than to find security though submission or domination;
- guilt feelings are an impediment to independence and start a cycle of rebellion, repentance submission, and new rebellion; and
- Summerhill does not offer religious education but it is concerned with basic humanistic values.

Another alternative model that has gained notoriety is the Montessori method developed in Italy by Maria Montessori in the early 1900s. The method is based on three principles; freedom, independent study, and individualization and so the learning environment is carefully designed to provide activities that are fulfilling, educational, and as self-correcting as possible. The belief is that learning is spontaneous, self-driven and that children should be allowed to develop naturally at their own rate while pursuing their own interests. The teacher’s role is to observe the students systematically and to arrange the learning environment so as to ensure
learning at the appropriate level with a minimum of help or lecture. The overall
objective is to allow individuals the opportunity to fulfill their potential and become
independent, secure and balanced humans beings (AMS, 1999; Gustaffson, 1994).
Seventy years later the Montessori method has been used in schools worldwide and
continues to be a popular option particularly at the elementary level.

Alternative approaches are not necessarily restricted to an existence outside
of mainstream schooling. There are many innovative and progressive educators
who choose to try and effect change within public system. One such example is the
Three-Dimensional Theory of Mastery developed by Meichenbaum and Biemiller
(1998). These specialists see the fundamental goal of education as providing the
skills, concepts, and strategies that will help learners to become independent and
eventually take responsibility for their own learning. Their intervention
encompasses the whole learning environment, meaning the individual learner as
well as the environment within which the learner participates, and uses
constructivist elements such as a collaborative learning, authentic multidisciplinary
content, and encouraging the teacher to adopt a role of facilitator or guide. Full
training and documentation on the process of skill acquisition and development,
environmental factors that can facilitate the process, and the teacher's role as
director of the intervention are also provided.

Briefly, the 3-D mastery classroom is one that presents tasks within the
student's zone of proximal development so that there is no risk of cognitive
overload. It then provides enough opportunities for practice so that the student can
eventually reach the point where he can reflect on his ability and help a peer work through a similar task. This process is outlined as acquisition, consolidation, and consultation, or the path to maximized self-directed learning, and works dynamically with the model's other dimensions of skill, and planning/application. The idea is that as the student develops enough skill and experience, the ability to transfer that knowledge to a variety of other contexts or domains ideally increases. Gradually the student will willingly take on more responsibility for his own learning.

This model is an exemplary attempt at integrating the learning theory defined previously. However, it should be noted that there are considerable drawbacks for progressivists working in mainstream education. Time constraints are always an issue particularly in the present context of mandatory standardized testing and common curriculum. Teachers are constantly hard-pressed to cover all the required material and often feel compelled to "teach to the tests." Furthermore, implementing the model to its fullest potential requires flexibility, not only on the part of the teacher but of the school as well. The authors themselves admit that the model is best utilized when the school can allow for hours to be somewhat manipulated as the peer teaching component necessitates co-operation between teachers so that students from different classes and grades can be allowed to work together. As is often found with educators trying to incorporate newer methods within a non-supportive school it can be extremely difficult to make any headway.
To summarize, the following characteristics are seen as contrasting the styles of alternative and traditional schooling (Chamberlin, 1994):

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most instruction occurs either individually in small groups</td>
<td>Whole class instruction. Learner works/achieves alone - competitive</td>
</tr>
<tr>
<td>Students help choose and organize content to be learned</td>
<td>Teacher determines what is to be learned</td>
</tr>
<tr>
<td>Students have input into rules</td>
<td>Teacher sets rules</td>
</tr>
<tr>
<td>Classroom is arranged to support groupwork</td>
<td>Classroom usually is arranged in rows facing the chalkboard</td>
</tr>
<tr>
<td>Student talk is equal to or exceeds teacher talk</td>
<td>Teacher talk dominates 70%</td>
</tr>
</tbody>
</table>

As we enter the age of technolopoly and witness the increased destabilization of society as we have known it, it is not surprising to see a polarization to one or the other stream. We are merely attempting to make sense of our current situation and prepare our youth for an uncertain future. Piaget speaks in terms of disequilibrium leading to accommodation or the restructuring of existing schemas into a new higher level conceptual change (Woolfolk, 1998). Projecting this metaphor to a broader context one might similarly state that society is currently experiencing this stage of disequilibrium. Educators, parents, and bureaucrats argue about how we can push a restructuring of education, but it is ultimately technology that stands to be the catalyst for conceptual change. There are a couple of reasons for this. First, as one of the dominant tools for the information age, it already is producing major paradigm shifts and infiltrating our society at such a rapid pace that it is virtually impossible to ignore it (Postman, 1992). Secondly, the application of technology to
educational is producing significant advancements that stand to redefine learning as we know it (Salomon, 1996).

The Impact of Technology on Educational Practice

The progression of instructional technology and educational practice is similar in that both originate in behaviourism or objectivism and then undergo radical restructuring with the advent of cognitive science. In first generation instructional system technology (IST) the objectivist tradition reflects information processing and behaviourist perspectives (Duffy & Jonassen, 1992). The key for information processing is the relationship between stimuli (input) and responses (output) and the cognitive processes that occur between the input and output (Kail & Bisanz, 1992). Instructional systems design (ISD) objectifies that relationship via the application of a prescriptive system that structures the instructional intervention. The traditional framework developed by Carey & Dick (1990) outlines the following set of procedures for instructional systems design:

- identify instructional goal and classify (psychomotor, intellectual., verbal., attitude);
- conduct the goal analysis (the major and subordinate steps for performing goal);
- identify the entry behaviours and characteristics of learner;
- define performance objectives (condition, behaviour, and criteria) and matching criterion-referenced tests (pre and post);
- decide instructional strategy (select media, sequence/chunk instruction, practice feedback); and
- design summative evaluation & remediation.
Here the mind, like a computer, is seen as manipulating symbols that acquire a meaning when external knowledge or reality is mapped or mirrored into it. Bednar et al., (1992) call this a traditional cognitive view as it reflects many of the behaviourist assumptions about the learner and the role of education. This methodology is also the foundation for many computer-based training (CBT) programs that rely on assimilation, practice, reinforcement, and measured outcomes.

The impact of constructivism on information systems design marks a dramatic shift towards a multidisciplinary integration of principles subsuming not only behavioural and information processing theory but also cognition, cybernetics, and artificial intelligence amongst others (Bednar et al., 1992). For the first time emulating human cognition and understanding the learning process are explored through factoring into the design constructivist elements such as goal-free evaluation, authentic tasks, knowledge construction, process versus product, context-driven evaluation, consideration of individual perspectives, and socially constructed meaning (Jonassen, 1992).

The result of these developments according to Bednar (1992) is that the majority of traditional ISD elements as outlined above are no longer applicable or necessary. Dick (1992) argues, however, that this view of constructivism swings the pendulum too far in the other direction. Though constructivist approaches may be more attractive and fun for the learner he suggests that a lack of interest in assessing entry behaviours and assigning learning objectives makes it extremely difficult for
designers to structure an intervention and to determine whether or not the learner has made any progress.

Regardless of these views, the popularity of constructivist environments has continued to gain momentum, particularly with the opening up of the World Wide Web to the public domain and mass production and accessibility of computer hardware and software. One example is the proliferation of applications under the theme Computer Supported Collaborative Learning (CSCL) as outlined by Koschmann (1996). Additionally, works include Ward & Tiessen’s (1997) Zebu, an educational groupware technology designed to tap into the networking capabilities and resources of the Internet for project-based learning within and between schools, and NetCourses (Hsi & Tinker, 1997) an experimental model using an application called LearningSpace for training teachers in the use of virtual collaborative technology for the eventual creation of web courses for a virtual high school.

In addition to the perceived benefits of peer evaluation and practical hands-on experience, Owston (1997) further outlines the following advantages of using this type of technology in education

- It has a mass appeal to younger generations and therefore can be used as a motivator.
- Using the World Wide Web allows for flexibility in terms of unrestricted time access and the ability to work from different locales.
- Technology enables new kinds of learning. The emergent knowledge sector will require a different kind of individual possessing skills such as critical thinking, problem solving, written communication and the ability to work collaboratively. Educators can take advantage of electronic learning environments to provide
practice in these types of skills and access sectors via the Web that apply these in practical settings.

- The Internet allows learners to tap into the international arena and thereby take the notion of collaboration to a truly global level.

**Electronic Learning Environments**

The electronic learning environments that have evolved out of these constructivist pursuits have contributed significantly to innovations in learning and technology. Wilson (1998) distinguishes between a learning environment as being a place for drawing on resources for developing understanding and constructing meaningful solutions to problems, and a constructivist learning environment as being “a place where learners may work together and support each other as they use a variety of tools and information resources in their guided pursuit of learning goals and problem-solving activities” (p. 5). This highlighting of the social and interactive aspects is the key element for electronic learning environments as it extends previous concentration on the learner towards embracing the communal and environmental factors that also affect the learning experience.

Salomon (1995) refers to this as the study of composites or holistic examination. He sees the future implications of this genre of study as being twofold. First, it integrates two other important functions of educational psychology, a) providing scientific explanation of what concepts of learning do and do not work, and b) guiding educational practice in the identification of new problems to be studied. Secondly, and most importantly, the electronic forum permits the creation and study of new and complex learning environments that can be held up as
artifacts to be modified and improved. Networked environments now not only incorporate constructivist qualities they can also sustain virtual environments that can stand as complete entities unto themselves thereby affording the study of the various environmental factors as well as the learning processes of the participants.

One example of a computer application that has used this model over the last several years is CSILE (Computer Supported Intentional Learning Environment). Tested extensively in a variety of educational settings, CSILE has shown that students using a knowledge-building technology which supports peer collaboration and reflection, can foster students' understanding of the concepts that give meaning to disciplines such as science, mathematics, and literacy. In addition, a focus on advancing the knowledge of a community as supported in such environments has been shown to help students come to understand the nature of learning and themselves as learners (Scardamalia & Bereiter, 1992).

The developers make a distinction between learning, an internal process of working towards a deeper understanding, and knowledge building as a social activity focused outward on the objects themselves (Scardamalia et al., 1994). The electronic forum supports knowledge building by bringing student work into a communal discourse that shares goals for knowledge advancement (Bereiter, 1994) and moreover engages students in higher-level cognitive activities such as explanation, problem solving, active intentional learning, and collaborative knowledge construction (Bowen et al., 1971).
The importance of environments such as CSILE is that they serve to exemplify new conceptions of pedagogy that can support a paradigm for learning in a knowledge society. Beyond the constructivist philosophy, they endorse a view of mind used in Artificial intelligence’s connectionist program model “which consists of a set of abstract objects that interact with each other and with the outside world according to purely quantitative schemes” (Bereiter and Scardamalia, 1996, p. 489). Thus the mind is seen as a pattern recognizer as it can perform functions such as literary interpretation, place recognition, or other kinds of thinking that do not fit into the current “mind as container” metaphor. In other words the mind can be “knowledgeable without containing knowledge.” Scardamalia and Bereiter recognize that this is not in keeping with present day educational view. Nevertheless, they maintain that the outcome for students participating in a CSILE environment is the development of creative thinking skills that can empower and lead to self-directed learning. In addition, assessment tools supported by the technology far surpass any current achievement-oriented test presently being used for inventoring mental content.

Up to this point, I have isolated the dominant theories of learning and principles that have evolved over the last century and attempted to illustrate how they affected the divergence of educational practice into the traditional and alternative streams. Discussion has also highlighted some of the impacts of instructional systems design on education as they have evolved from an objectivist orientation to embrace constructivist ideologies. These in turn affected a whole new
generation of learning environments supporting the holistic study of the learner and setting within which the learner interacts. The ultimate purpose of this investigation has been to suggest that learning theory in collaboration with electronic learning systems potentially offers a framework for a new pedagogical paradigm.

This new genre of learning environments and their capacity for using the Internet for creating and supporting communities of learning is seen as a powerful force for future education. The remainder of this thesis will further elaborate this notion of creating culture as I address the questions of whether or not one can actually create culture, and how one might incorporate learning theories into the design of an electronic learning environment. The result is a design experiment the details of which also follow.
IV. TOWARDS A NEW PARADIGM FOR EDUCATIONAL PRACTICE

Can We Create Culture?

"Consciousness is not produced by nature, it is a product of society" (Wertsch, 1985, p. 63). One of the primary distinctions that has been made between man and other primates is his ability to move beyond an elementary natural memory or perception where behaviour is influenced largely by external stimuli, to extending memory to a higher level of thinking via the manipulation of sign operators. These self-generated or external tools, such as memory aids or language, have become the means by which societies establish cultural norms of behaviour and in turn, by which culture or consciousness is transmitted to individuals (Cole et al., 1978).

We have only to look at the history of humanity to witness the unquestionable influence of a society on its individual members. One early example noted by anthropologist Forbes, is the African Tale society whose method of enculturation incorporated a joint enterprise model. Here youth were exposed to and involved in all levels of the society such as the social structure, economic system, ritual and ideological system, but only to a level that corresponded to their ability or stage of mental and psychological development (Cole, 1978). The apprenticeship method grew out of the need to perpetuate specific trades or craftsmanship over generations. It was the masters in these domains who would be
enlisted to teach the trade or craft to young apprentices (Gardner et al., 1996). More currently is the pervasive influence of modern day mass media and advertising icons on the spending habits of millions of consumers worldwide. For thousands around the globe, to cite one of a myriad of examples, quenching thirst is equated with drinking Coca-Cola.

Vygotsky described this as a socio-cultural phenomenon (Vygotsky, 1978). He asserted that consciousness is produced by society based on the use of symbols, language and other tools which mediate all human psychological processes and which are acquired and used by individuals in a collaborative environment (Karpov & Haywood, 1998). At first these tools are imposed as an external force in the socialization of children, but as they become internalized and practiced eventually are used for self-regulating and regulating the behaviour of others (Bruner, 1978). Thus both tools and symbols enable people to mediate or to act on and within their environment (Gardner et al., 1996).

It would appear then that although humans are influenced primarily by their social milieu, they also have the capacity to create environments or cultures that can in turn affect the consciousness, even behaviour, of individuals within that environment. With respect to the example involving media and advertising, where it boils down to matters of capital gain corporations have honed this ability to a fine art. Thus it stands that interpersonal (individual) and intrapersonal (social) processes are inextricably linked and construct each other (Kruger & Tomasello,
1996), and that persons, being social creatures, have evolved innately hardwired to learn and assimilate culture readily, willingly, and effectively (Cole, 1978).

Having established the notion that we are in fact capable of creating culture, a new challenge for instructional designers and educators is whether one can create a culture or community specifically for learning. In terms of our research pursuits the question became how one might embody the aforementioned learning principles into the design of an electronic learning environment aimed at creating a culture for learning. The subsequent section further explores this through a specific design experiment that was developed for an intervention for health promotion. However, before going into the details of the experiment, the generic design elements are first outlined.
Design Elements of a Proposed Electronic Learning Environment

The proposed design is based on an architecture which consists of a virtual component, grounded in Vygotsky's socio-cultural theory, and an instructional component, rooted in the principles of learning extracted in section two.

Virtual Design

One characteristic of virtual space is that it has no boundaries and can be carved up in any way desired. The four-node Intranet, or internal network, presented below was built to reflect the inter - intrapersonal interaction which has been presented as the heart of the socio-cultural model. Research in distributed knowledge in organizations suggests that individuals need to have their own space.

![Diagram of a four-node Intranet](image-url)
to generate work before they are ready to share it with the larger group (Boland et al., 1994). For this reason, although the social activity is the main thrust of the environment, the Personal space allows for individuals to create private documents, save works in progress or engage in private communication with the facilitators or other peers.

The design as it is represented here is a shell only and void of content. The culture itself is created once the theme or domain is established, the WorkSpace is scaffolded with the instructional design, and the Resource area is seeded with references. It should also be noted that the Resource area further opens up the virtual space to the outside World Wide Web providing links to other domain-specific resources and experts actually working in the field of inquiry. A concrete example of how the virtual space houses the instructional design is described in the design experiment below.

**Instructional Design**

Vygotsky's zone of proximal development as discussed earlier, provides a whole-class instructional methodology that can also provide learning opportunities oriented towards developing deeper levels of understanding, at both a group (interpersonal) and individual (intrapersonal) level. The instruction establishes the culture for learning by providing the collaborative tools that will be used (i.e. research protocols and strategies). In conjunction with the electronic environment, it further structures group discussion.
The Health Promotion Learning Environment (HPLE):

A First Iteration Design Experiment

Overview

An interest in electronic learning environments and their perceived benefit to health promotion brought together a group of researchers, educators, health professionals, and a Toronto community. This group, called KidsTrack (see Appendix A), had the common goals of using electronic environments for researching and developing indicators around the health and well being of the community’s youth and enhancing collaboration and linkages within schools and between schools and their community.

From this collaboration, a prototype health unit called the Health Promotion Learning Environment (HPLE) was created using Lotus Notes Domino. HPLE was integrated into the health studies unit of two of the community schools. The design of this web-based environment allowed students to take advantage of Internet- and community-based resources and drew on principles derived from current research in the learning theory to develop deeper understanding and promote higher-order thinking and cognition about health issues.
Method

Participants

A total of sixteen students from the high school and public school: seven from the male Grade 11 physical education class and five females and four males from Grade 8. Time allotment was nine sessions over a three-week period. Due to variances in class schedules between the schools, the Grade 11 group was only available for 40 minutes/session (a total of 360 minutes) while the Grade 8 group had an average of 50 minutes/session (a total of 450 minutes).

The intervention took place in the high school computer lab. A minimum of one, but usually two, facilitators were present at each session. In addition, a group of external resources comprised of the community health office, the local library, and experts in health promotion were available to students.

HPLE Objectives

- To implement a prototype virtual learning environment that could ultimately meet curriculum requirements for health studies.
- To engage students in purposeful Action Research on personally relevant health issues.
- To develop skills in research methodologies, using innovative technologies and collaborative models for students.
- To provide a rich resource base including linkages to experts in health promotion.
- To share student data results with the larger community.
Virtual Space Design: A Closer Look

The virtual environment was built as four distinctive but interconnected spaces or views: an interpersonal WorkSpace for discussion and research activities, a Resource database, a Calendar for scheduling, and a Personal space for intrapersonal activities and email communications. Each view supported a different activity and generally allowed the user to create one or more forms. Below are further details on each of the views with visual representations as seen from a web browser.

WorkSpace. The WorkSpace, as the core or heart of the environment, served as the collaborative area for the groups to engage in on-line research pursuits, read other members' documents, and participate in collaborative activities. Five types of forms were designed to scaffold the research: discussion document, research plan,
data input, research report, and evaluative summary. Links to the other views in the environment - in this case the calendar, personal, and resource database seen in the upper left corner - were always available to the user. The area in the bottom right contained five categories by which all documents were sorted.

WorkSpace Categories: The first category Course Outline & Documents, was posted as a reference for the course details along with support documentation on methods of research and ethical guidelines. The remaining categories: Drugs, Fitness & Health, Sexuality & STD, and Smoking were created after the students identified these as being their topics of interest.

Resource Area. The resource area contained a selection of reference documents, web links, and information for contacting health professionals. Students were directed to this area as a starting point but were also encouraged to find their own sources that they could add to the space by creating a new resource form. Users could also rate the utility of the references provided.
**Personal Space.** As the only private space in the environment this area served a dual function; as an internal messaging area for course facilitators and students to communicate, and as a place for individuals to store private documents or documents not yet ready to post to the group. Forms available to users were message, reply, and document.

Calendar. The calendar was enabled for use by the course facilitators for posting announcements, deadlines, and course information.
Instructional Design: Creating the Zone of Proximal Development

Pre-Test and Post-Test. Students completed a pre-test. Its purpose was to gather information on students’ feelings about empowerment, health interests, web experience, and their ability to differentiate between theory and evidence. It is here that they were asked to identify the issues they saw as being most important for their own health (see Appendix B). From this information four research groups emerged: Drugs, Fitness and Health, Sexuality and STD, and Smoking. Upon completion of the project the post-test was administered (see Appendix C).

Orientation. Students were introduced to the environment, its uses, and the course objectives. Next, the three types of research methods supported in the environment (observation, questionnaire, and standard research), as well as ethical considerations for doing research were discussed (see Appendix D). Students were pointed to the support documentation in the WorkSpace as well as given hard copies. The objective was to ensure that the students were comfortable in performing the skills required to navigate the environment before launching into the activities.

Assigned Tasks. Although the aim was for the students to generate their own documents, the WorkSpace was further scaffolded to help them progress through their research in manner that it was hoped would differentiate between theory and evidence, and reflect about their work. They were asked to work through four tasks that were grouped into two separate activities.
Activity 1

1. Identify why the topic they selected is a problem in their neighbourhood.
2. Find evidence to show that the problem exists.

Activity 2

3. Identify the cause of the problem researched in Activity #1.
4. Find evidence to support causal explanation.

Each activity initiated a round of research that was left up to the student to plan, carry out, and report back findings on. At all times throughout the intervention students were encouraged to engage in discussion with and comment on work of other peers. In addition, an ongoing dialogue between the facilitators and students took place in either the Personal or WorkSpace depending upon the nature of the communication.

Wrap-up. Students completed an evaluative summary of their work, and were asked to make suggestions on how their issues might be addressed or improved at the community level. This work is posted on the HPLE Web Site for access by the public at http://lson.oise.utoronto.ca/psp/kweb.nsf

Results

We examined several aspects of the students’ activities as indications of the success of the design experiment. These will be discussed under the headings amount and type of activity and lessons learned from a qualitative overview of the design experiment. In addition, the students’ evaluative summaries are attached in
Appendix E. Neither these nor the pre-test/post-test yielded evidence of substantial conceptual change, and are thus not reviewed in detail. The implications of this are, however, taken up in lessons learned. Evaluations and a demonstration are at http://fsn.oise.utoronto.ca/psps/ktweb.nsf and http://fsn.oise.utoronto.ca/school+partners/psps/hplewebdemo.nsf respectively.

**Amount and Type of Activity**

The students posted 155 notes. The engagement was high and the overall quality of the work good. Below is a breakdown of the work generated. Of the sixteen students who participated in the project, all completed Activities 1 & 2, except for one student who only completed the first activity. Three of the Grade 11 students did not do any further research in the database after this point, and opted to submit essays to the health instructor at a later date. The other students did an average of 2 research plans and 2 research reports (one per activity). Twelve students completed an evaluative summary, 1 was incomplete and 3 students did
not participate. The data input forms were created by students doing questionnaires and represent graphs that were generated from their results. It should also be noted that the Grade 8 group submitted substantially more work than did the Grade 11 group.

**Lessons Learned**

*Time Constraints.* An initial assessment of the work generated reveals time constraints as being an important factor that affected student participation. As mentioned earlier the project was limited to only nine sessions. In addition to this, slow connection speed in the computer lab created further delays in logging on to the environment and saving documents. We estimate that a further ten minutes (sometimes more) per session were lost in potential work time. Unfortunately the computer lab was constantly booked for other courses making out of class lab access virtually impossible.

All in all, the students ended up losing an average of 90 minutes over the nine sessions. On top of this the Grade 11 group had almost 100 minutes less on-line time than the Grade 8 group. For the older group this was often frustrating, as they would have to leave before they were able to get any solid work done. We think that this may be one of the reasons why they did not generate as many documents and why some decided not to continue in the project.

For a next implementation we would suggest a minimum of fifty minutes per class and a longer intervention period. This would enable a better structuring of the
course into environment orientation and training, research methodology, and on-line work time.

**Environment Design.** As this was the first pass at a prototype, some technology features were augmented by live investigator interventions to simulate what would eventually become automated features of the environment. An example of this was simulating the transformation of data from student questionnaires into graphs. Students would input data from their questionnaires into the data input form (a quasi-spreadsheet) and from there the researchers would use Excel to generate the graph and post it back into the WorkSpace as a linked document. The flexibility of the Lotus Notes Domino software was an asset in that it allowed the researchers to implement these requirements “on-the-fly” with relative ease. Suggestions for the next version of the environment would be to automate this as well as some other functions such as the pre- and post-test, the generation of research topics from the pre-test, and the creation of user names and passwords, and teacher tools.

**On-line Teacher and Expert Participation.** One area that was not sufficiently addressed in this intervention was the on-line participation of health promotion experts and teachers. An important component of helping to advance student knowledge is providing a means for them to interact with and be guided by experts in the field of inquiry. Although we did have experts and professionals available to the students, time did not permit for any substantial interactions or dialogue to occur.
With respect to the teachers, although their support and assistance was instrumental in getting the project off the ground, the fact that we were taking a small group out of each class made it difficult for the teachers to have a presence in the electronic environment. We would strongly recommend that necessary arrangements be made for preparing and/or training these key players for any future projects.

**Student Feedback.** In a post discussion the majority of the students mentioned that they enjoyed the intervention and would much rather health studies using this structure as opposed to traditional health where teachers essentially just talk and cover predetermined topics. Some enjoyed the electronic venue not only for its use of technology but also because they saw the potential of asking questions and bringing up topics that they might not feel comfortable broaching in front of their peers in class. Linked to this was the idea that one could also hold private discussions with experts if desired.

Nevertheless some students felt that the intervention was too rushed and that they were not able to pursue their topics as fully as they would have liked. In addition frustration at technical glitches and slow connection speeds also affected motivation and interest levels.

**Creating Culture.** Although it was not expected that this project would actually be able to create a far reaching culture, what became extremely apparent in the preparation and implementation was the number of complimentary activities and vast resources that already exist in the field of health promotion. In essence a
culture already exists. What would be required however is a collaborative effort to intentionally network and define what the virtual culture would look like and how it might be used by students, educators, and professionals for the promotion of health at large. Initially this might require much effort and organization, but it is believed that eventually it would take on a life of its own and become self-organizing.

With respect to the educational applications of an environment like HPLE we believe that it could be extended beyond the local school community to incorporate school institutions and community centres nationally and internationally. In the spirit of the HPLE we submit that eliciting input from children worldwide on the factors influencing their own health and well being would contribute to a greater understanding of the relevant issues. This data in turn could be applied to the creation of effective strategies for health promotion.

Next Steps

The challenge of creating an environment for scaffolding student research, promoting conceptual change, and creating a pro-active culture that can extend beyond the school walls into the larger community is a task far greater than could be accomplished in a nine-session intervention. Nevertheless, the amount of work contributed by the students over such a short period and their enthusiasm, in spite of the many limitations, leads us to believe that this is a viable and worthwhile pursuit. We propose that a longer, more carefully planned second intervention incorporating some of the issues mentioned above, could move us further towards
meeting our stated objectives. It is our hope that we will be able to maintain continued support from our Parkdale partners and that in addition, one to two other school communities might be incorporated into a revised study in the near future.
V. CONCLUSION

A Note about Technology

There are those who might argue that technology is not required to create a true learning situation. This is a common debate in pedagogical circles, particularly amongst those inexperienced in or mistrustful of the utility of information technology in the classroom (Owston, 1997). The point here is not to argue whether or not teachers are better able to create learning environments in traditional school settings; a new tool does not necessarily make for better product. It is most definitely the instructional design and not the medium delivering the instruction that is first and foremost in improved learning. Nevertheless, having said that, how technology is structured to support the instructional design is an important factor for promoting even further advancement and there is sufficient evidence that it can lead to positive outcomes in student learning (Scardamalia & Bereiter, 1992).

Perhaps a more serious issue is the perceived threat of technology as we move towards the age of technopoly. Criticism from alternativists commonly is that technology can dominate or stifle the natural creativity or individuality of the learner. It has been suggested that educators’ ability to accommodate individual differences will improve as technology becomes more sophisticated (Suppes, 1971) likely even better than a single teacher faced with a classroom of 30 students. Nevertheless, this paper does not pretend to ignore the negative aspects of
technological development. It is the case that technology is used to play on and manipulate our behavioural nature. Science fiction, and some academic scholars such as Bailey (1996), only too well depict futuristic worlds where our machines evolve into super intelligent entities that battle to take over human civilization. A computer scientist might counteract by saying that our creations are only as smart as the humans who create it. Unfortunately, this may be of little consolation to those who see technology as a danger.

In either event, the reality is that technological entrenchment is not only inevitable, it is encroaching on every aspect of our daily lives at an exponential rate. The danger inherent in Postman’s model is that technopoly drives society via an external locus of control. This, of course, is not new. Humanity has a legacy of mass manipulation as seen from religion to wars to Nazi Germany, just to mention a few. The issue is whether or not Postman’s vision accurately portrays a future eventuality or if in fact we can avert this grim projection.

Of behaviourism one can say that to our advantage it has made public knowledge our susceptibility to conditioning and our willingness to accept external dominance. The corporate world continues to capitalize on this pouring billions of dollars into developing media for the transmission of digitized culture to younger and older generations alike. The position of this thesis is that, if commercial entities can use technology for their own purposes, so too can educational reformists. Using the same methodology and alluring innovative tools, we can explore and develop an understanding of our collective human experience, use that insight to meet our full
potential, and create a mass culture that we see fit for global harmony. Postman (1992) suggests that man-made tools have progressed from being separate from the culture, to bidding to become the culture (technocracy), to redefining the culture (technopoly). I propose that it is within our grasp to take control and systematically create pro-active “virtual” cultures oriented towards learning and the betterment of the human experience. This has been the motivation behind identifying the latest research in learning and technology and highlighting the works of those who would apply this knowledge for the ultimate health, well being, and advancement of future generations.
REFERENCES


APPENDIX A:
KidsTrack Project

Overview and Objectives

1. KidsTrack

The purpose of this project is to foster neighbourhood capacity to work collaboratively in problem solving and resource development for the betterment of the social conditions that affect youth. The intent is to develop an electronic learning environment, KidsTrack, that will enable neighbourhood community groups to collaborate using data about local communities in order to: (1) communicate, discuss, search out expertise and organize themselves around developing indicators of children’s health and well-being; and, (2) use those indicators to enhance the development of issues of importance to their community programs and activities.

KidsTrack is a consortium of researchers and professionals with experience and expertise in health promotion, human development, education, and information processing.

2. TL-NCE (Telelearning Network of Centres of Excellence)

The purpose of TL-NCE is to develop strong technology-based approaches to the major challenges that Canada faces in becoming a learning society with a knowledge-based economy. The goal is to bring collaborative tools together into coherent systems and use them to support knowledge-building and collaborative learning. The principal focus of the research program is design -- design of learning models and instructional methods, and design of the technical systems to support them.

TL-NCE Theme 2 - Socio-Economic Models: Knowledge-Building Networks for Human Development

The overall goal of TL-NCE Theme 2 is to understand the factors that impact on the social and economic value and utility of TeleLearning Networks as the infrastructure for the development of a learning society. Project 2.2, the Learning Society Network (LSN), will focus on building Learning Networks in diverse settings (educational, workplace and community) and on the study of the use of the technology to facilitate knowledge building versus the traditional commonplace information transmission.

KidsTrack Steering Committee Members

- Toronto Public Library and Parkdale Library
- City of Toronto Department of Public Health
- The Board of Education for the City of Toronto
- Department of Human Development & Applied Psychology (HDAP), OISE/UT
- Department of Behavioural Science, Centre for Health Promotion & Provostial Advisor for Population Health, University of Toronto (UT)
- TL-NCE (TeleLearning Network of Centres of Excellence) Theme 2

For Further Information

Anita Zijdemans
OISE/UT, HDAP - 9th Floor, 252 Boor Street West, Toronto, M5S 1V6
(416) 923-6641 x2306, Fax (416) 926-4708
Email: azijdemans@oise.utoronto.ca
APPENDIX B

Students' Interest and Importance Graph
APPENDIX C

Parkdale Schools Project Pre-Questionnaire

Please answer the following questions. There are no right or wrong answers, we just want to know what you think. After you complete your Health unit at school, we will be asking the same questions again to see if your ideas have changed.

Birthdate (Day/Month/Year):__________

Sex: ☐ Male  ☐ Female

Will you be participating in the computer-based health project?  ☐ Yes  ☐ No

1. What do you think causes some kids to fail at school?
2. How certain are you that this is a reason that some kids fail at school?

Just a guess □  It might be □  Pretty Sure □  Positive □

3. If someone disagrees with you, what might they say is the reason that some kids fail at school?

4. If someone disagrees with you, what proof would you give to make them believe that your reason was right?

5. How interested are you in what happens in your neighborhood?

Not at all □  Very little □  A bit □  A lot □
6. Do you feel that adults listen to what you or other kids have to say about your neighborhood?
Not at all □  Very little □  A bit □  A lot □

7. Do you feel that you or other kids can change things in your neighborhood?
Not at all □  Very little □  A bit □  A lot □

8. Do you think that what happens to your neighborhood affects your own health and well being?
Not at all □  Very little □  A bit □  A lot □

9. What does *good health and well being* mean to you?
10. In the table below is a list of health topics. Please rate how important you think each issue is to the health and well being of kids in your neighborhood by checking the appropriate box.

**Families:**

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**Self-esteem:**

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**Stress:**

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**Communications:**

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**Emotions and Feelings:**

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**Sexuality:**

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**Sexually Transmitted Diseases:**

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<th>Not at all</th>
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Substance Abuse (e.g., drugs, alcohol, tobacco)

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Safety Education:

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First Aid:

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Dental Health:

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Nutrition:

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Physical fitness:

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Health Care:

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Community Services:

| Not at all □ | Very little □ | A bit □ | A lot □ |
11. Now, in the table below, rate how interested you are in learning more about each of these topics by checking the appropriate box.

**Families:**
- Not at all □
- Very little □
- A bit □
- A lot □

**Self-esteem:**
- Not at all □
- Very little □
- A bit □
- A lot □

**Stress:**
- Not at all □
- Very little □
- A bit □
- A lot □

**Communications:**
- Not at all □
- Very little □
- A bit □
- A lot □

**Emotions and Feelings:**
- Not at all □
- Very little □
- A bit □
- A lot □

**Sexuality:**
- Not at all □
- Very little □
- A bit □
- A lot □

**Sexually Transmitted Diseases:**
- Not at all □
- Very little □
- A bit □
- A lot □

**Values:**
- Not at all □
- Very little □
- A bit □
- A lot □
Substance Abuse (e.g., drugs, alcohol, tobacco)

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Safety Education:

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First Aid:

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Dental Health:

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Physical fitness:

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Health Care:

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Community Services:

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12. How often do you use the Internet (Web)?

Never □  Occasional □  Once a month □  A few times a month □  At least once a week □

13. If you had a personal health question or concern where would you go to find the answer?

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<th>Never</th>
<th>Sometimes</th>
<th>A lot</th>
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<tbody>
<tr>
<td>doctor</td>
<td>□</td>
<td>□</td>
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<td>teacher</td>
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<td>parent</td>
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<tr>
<td>school nurse</td>
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<td>health centre</td>
<td>□</td>
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<td>library / books</td>
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<td>web/Internet</td>
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14. Compare using the Web to how health is usually taught e.g. school health class, TV announcements, brochures, health worker telling you something.

Read the following statements and tick how much you agree or disagree.

a) At school I am often embarrassed to ask personal or health questions in class  
I agree □  not sure □  I disagree □  never used the Web □

b) Computer based games and quizzes make health information more real and meaningful for me.  
□ □ □ □
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<td><strong>c)</strong> The web is a more fun way to learn than the usual health education methods.</td>
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<td><strong>d)</strong> I like using the Web because no one knows who you really are (anonymous).</td>
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<tr>
<td><strong>e)</strong> If a friend had a problem I would tell them to use the Web.</td>
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APPENDIX D

Course Outline

Day 1: Orientation & Select Topics
1. Introduction
2. Create a document and list 5 health issues that you feel affect your health and well being
3. Read the guideline on Standard Research Methods. click here ->
4. Review the Ethics Guideline. click here ->
5. Hand in user name/password (Create message in Personal Space to Anita)

Day 2: How will you demonstrate that your issue is important?
1. Check to see what topic you will be researching.
2. Choose which method you would use to prove that your issue is a problem in your
neighbourhood.
4. Group Input and discussion.
5. Finalize Research Plan

Day 3: Conduct Research

Day 4: Group Report
1. Post Findings
2. Create Group Report

Day 5: How will you demonstrate the cause of the problem?
1. Comments & Input
2. Post plan for how you would show the cause of this problem in your neighbourhood.
3. Group feedback/discussion
4. Finalize Research Plan

Conduct Research

Day 6: Create Research Report
1. Post Research Report

Day 7: Next Steps?
1. Comments & Input.
2. Generate Group Report of research done

Day 8: Wrap Up
1. Read Comments.
2. Suggest Solutions.
3. Decide on Presentation plan

Day 9: Finalize Presentation Plans
APPENDIX E

Research Methods

There are many different ways to do research and each has specific strengths and weaknesses. This document will describe some of the ways that you might want to gather information for your health projects. Remember that this list is only a few of the ways to do research – use your imagination!

**Information Search**

**Description:** One way to do research is to get information that other people have collected. (This is a good place to start, even if you want to do some of your own research.)

**Method:** There are several ways to get access to information. We have provided a "Resource Database" to help you – but this is only a start. The database has some health-related documents, web sites, information on libraries, and phone numbers or e-mail addresses for experts that you can contact.

**Reporting the Data:** Try to say things in your own words. It is very important that you say where you got your information.

**Example:**

*According to the Canadian Centre for Substance Abuse, tobacco costs Canada more than illegal drugs or alcohol! Check out their web site: [http://www.ccsa.ca/](http://www.ccsa.ca/)*

**Observation**

**Description:** One of the most basic and useful ways to do research about your neighborhood is to have a look around you and record what you see.

**Method:** Plan before you start! Decide what you are going to look for and how you are going to look for it. For example, you could decide to count the number of different students you saw smoking at noon. Or else, if you were interested in health services, you could take a walk around your neighborhood and see what services there are.

**Reporting the data:** When you report the data, first tell what you did – how you made your observations. Then tell what you saw.

**Example:**

*On Friday, from 12:00 until 12:30 p.m., I counted the number of students smoking by one school exit. In total, there were 15 people who were smoking.*
Interview
Description: People are great sources of information. One way to get this information is to ask a series of questions in an interview format. You may be interested in the person's own experiences or else other knowledge that they have.

Method: It is very important to think about what questions you want to ask before you do an interview. Write them down and bring them with you. Once the person starts talking, listen carefully and ask questions about interesting things that they say. You may want to tape-record the interview (tell us ahead of time if you need a tape-recorder).

Example: You might want to interview the school nurse about what problems students come to see her about. Your questions might be something like:

Do many students come to ask you for information about health issues?
What are the most common issues that students want information about?

Reporting the Data: There are two basic options for reporting an interview:

1) You can report the questions you asked and the answers the person gave. (Make sure that you write down exactly -- word for word -- what was said.)
2) You can summarize, in your own words, what was said during the interview.

Questionnaire
Description: Questionnaires involve asking people questions or asking them to judge statements. You can ask them yourself and record what they say or you can have them write their answers (like you did with our questionnaire before you started this project). In general, this is a good way to get quick information from a number of people but you do not get any details.

To make a questionnaire, first think about the information that you want to find out from people. Then choose one these formats for your questionnaire:

1 a) Multiple Choice – agreement with statements

Method: You give people a statement and ask them how much they agree or disagree.

Example:
Homelessness is a serious issue. Do you...

Reporting the data: For this type of questionnaire, you usually want to calculate the average response. (We can help with this). Then you can say, for example, that most people “Agree” that “homelessness is a serious issue.”
1 b) Multiple Choice – answers to statements

Method: You give a statement and ask people to choose from a series of answers.

Example:
The most serious health issue for teens is...

Reporting the data: For this type of questionnaire, you will usually want to report how many people chose each answer.

2. Short Answer

Method: For this type of questionnaire, you ask people to give a short answer to a question. For example, "What do you think is the most important health issue for your neighborhood?" This gives you more detailed information, but it is more difficult to report.

Example:
What do you think is the most serious health issue for teens in your neighborhood?

Reporting the data: You have to summarize the different answers that people give. Try to see if several people say the same thing.
Ethics Guidelines

Ethics is a word used to describe a set of rules or morals about how to act with people. As researchers, there are special rules that we must follow. You are going to be getting information about the health and well-being of the people in your neighborhood. If any of this information directly involves people, please keep in mind these general principles:

Safety: Do not do anything that could harm yourself or others.

Integrity: Be honest and respectful to people.

Privacy: The people you talk to have the right to privacy. If you are going to tell their story, or give information about them, then make sure that they can not be identified.

Consent: If you are getting any information that directly involves people (e.g., giving a survey or doing interviews), then they must understand what you are doing and give permission.

If you have any questions, please ask us. At the following web site, you can also check out the rules that we have to follow as psychology researchers:
http://www.apa.org/ethics/code.html
## Individual Summary: Drugs Research

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<td>To:</td>
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<td>Research Group:</td>
<td>Drugs</td>
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<td>Drugs Research</td>
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<td>Date/Time:</td>
<td>03/27/98 10:57 AM</td>
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**What problem did you research?**
I researched drugs. Me and ryan did a questionaair. Then I did an observation.

**If I told you that I don’t believe the problem exists, what would you say to convince me?**
I would say look around you. Look at the children. Sometimes you can see them taking it. Look at the streets, its filled with drugs.

**How well did your findings prove that the problem exists?**

**What did you originally think was the cause of the problem?**
I think someone made it, and it made them feel different, then it caught on to other people and they could not stop.

**What did you find out about the cause of the problem?**
I found out that it has a lot to do with pressure.

**How well do your findings support your original idea?**

**What do you now think is the cause of the problem?** (i.e. have your ideas changed?)
I still feel the same way.

**What do you think should be done about the problem?**
I think they should band drugs.
**Individual Summary: Fitness and Health**

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<td>Everyone</td>
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<tr>
<td>Research Group:</td>
<td>Fitness &amp; Health</td>
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<tr>
<td>Subject:</td>
<td>Fitness and Health</td>
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<tr>
<td>Date/Time:</td>
<td>03/27/98 11:00 AM</td>
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</tbody>
</table>

**What problem did you research?**
I researched on Fitness and Health and mainly focused on people with weight problem, bad eating habits, and smoking.

**If I told you that I don’t believe the problem exists, what would you say to convince me?**
I would show you the survey I made about smoking, eating habits, and weight problems. I found out that exercise is not very popular. People choose snacks over meals, and the people that smoke knew it was unhealthy but just did it anyway.

**How well did your findings prove that the problem exists?**
I thought the problem with smoking was when they see a person they admire (friend, star, etc) that smokes they think they could be like them if they smoke too. I thought the problem with eating too much was all of the advertisement that all around about all of the tasty restaurants near by. I thought the problem with weight problems (too fat, too small) is with the advertisement also. Models are skinny and the food advertisement everywhere.

**What did you find out about the cause of the problem?**
That people smoke just because they want to, people eat unhealthy because it tastes better.

**How well do your findings support your original idea?**

**What do you now think is the cause of the problem?**
I think people think they’re invincible. They think things that happen on television will never happen to them. They only realize until they get lung cancer, in the hospital because of anorexia or in the hospital because of a heart attack. My ideas changed completely.
<table>
<thead>
<tr>
<th><strong>What do you think should be done about the problem?</strong></th>
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<tbody>
<tr>
<td>I think there should be more advertisement about people with smoking problems, heart attacks and other things that have to do with health and fitness. I think people that have had a problem should make some sort of group that will go to schools and talk about the risks that they took.</td>
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# Individual Summary: Smoking part II

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<th>Subject</th>
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<td>03/27/98 10:31 AM</td>
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**What problem did you research?**

If I told you that I don't believe the problem exists, what would you say to convince me? (use your findings)

<table>
<thead>
<tr>
<th>How well did your findings prove that the problem exists?</th>
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<tr>
<td>Not at all</td>
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**What did you originally think was the cause of the problem?**

The cause of the problem is nicotine

In the Questionnaire

10 out of 12 people said it was because of nicotine

2 people said they don't know

**What did you find out about the cause of the problem?**

No my ideas did not change, nicotine is stil the major cause of addiction to smoking because it is a physical addiction

**What do you now think is the cause of the problem? (i.e. have your ideas changed?)**

I think the government should treat cigarettes like it does with Alcohol and control the sale of it
The main problem that I researched is why smoking is a problem in my neighbourhood, or why people smoke.

I prepared a questionnaire, in which I asked 12 people why they smoke:

- 5 people when asked why they smoke said because of stress, to relax or calm nerves or because of being upset
- 3 said because of being addicted or hooked
- 2 said they smoke because of peer pressure
- 1 person said because they like the taste
- 1 person said because of being sad, and or depressed

When asked if they plan to quit in the near future:

- 9 people said they would like to quit in the future for a number of reasons, the most common being "not good for my health" other reasons were that smoking is not very clean, and some said it harms their children
- 2 people said they did not want to quit because they liked it
- 1 person was not sure

When asked what makes smoking addictive:

- 10 people out of the 12 said it has to do with the nicotine
If I told you that I don't believe the problem exists, what would you say to convince me? (use your findings)

I would hand the questionnaire over to you which illustrates that a problem exists for the individual who smokes causing the person lung cancer and a series of physical problems, also for the non-smoker, second hand smoke is more threatening to the health of non-smokers than it is to smokers. People who smoke intake a variety of chemicals into their body such as tar, rat poison, carbon monoxide, and arsenic to name a few.

Smoking also has effects on unborn children. It causes Asthma, low birth weight, and birth defects.

On top of that it costs millions of tax payer dollars to treat these ailments that could have easily been avoided if people didn't smoke.

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<thead>
<tr>
<th>How well did your findings prove that the problem exists?</th>
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<tr>
<td>The cause of smoking was most likely peer pressure because it takes a while before the body and the lungs adjust to the smoke. However, the cause of addiction is nicotine.</td>
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<thead>
<tr>
<th>What did you originally think was the cause of the problem?</th>
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<tr>
<td>12 smokers were asked as to why they smoke and they said the following:</td>
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<tr>
<th>What did you find out about the cause of the problem?</th>
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<tr>
<th>How well do your findings support your original idea?</th>
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<tr>
<td>Very little</td>
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<th>What do you now think is the cause of the problem? (i.e. have your ideas changed?)</th>
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<tr>
<td>The cause of the problems</td>
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<tr>
<th>What do you think should be done about the problem?</th>
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<tr>
<td>This plan sounds very unrealistic but I believe the government should ban smoking and should treat it as a drug. Cigarettes should no longer be sold freely because young people have access to it. Even if they treat it like alcohol young people still have access to it. Smoking costs a lot, both for the individual smoker and the government in treating these smokers.</td>
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## Individual Summary: sexuality and STD

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<td><strong>Research Group</strong></td>
<td>Sexuality &amp; STD's</td>
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<td><strong>Subject</strong></td>
<td>sexuality and STD</td>
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<td><strong>Date/Time</strong></td>
<td>03/27/98 10:54 AM</td>
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<tr>
<td><strong>What problem did you research?</strong></td>
<td>The problem that I researched on was sexuality an STD, and I based my research in sex-workers, to know if they protect their self to see if they were in a way responsible to spread-out the STD because of the kind of life they live.</td>
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<tr>
<td><strong>If I told you that I don't believe the problem exists, what would you say to convince me?</strong> (use your findings)</td>
<td>I can say alots of things to convince you. But whatever the sexworkers spread or not spread out STD is something that can not be know with a short time proget like this one. Also one or two sexworkers can't speak for all of them.</td>
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<td><strong>How well did your findings prove that the problem exists?</strong></td>
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<td><strong>What did you originally think was the cause of the problem?</strong></td>
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<td><strong>What do you think should be done about the problem?</strong></td>
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<tr>
<td>What problem did you research?</td>
<td>I researched drugs. Me and Ryan did a questionnaire. Then I did an observation.</td>
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<tr>
<td>If I told you that I don't believe the problem exists, what would you say to convince me? (use your findings)</td>
<td>I would say look around you. Look at the children. Sometimes you can see them taking it. Look at the streets, it's filled with drugs.</td>
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<td>How well did your findings prove that the problem exists?</td>
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<td>What did you originally think was the cause of the problem?</td>
<td>I think someone made it, and it made them feel different. Then it caught on to other people and they could not stop.</td>
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<tr>
<td>What did you find out about the cause of the problem?</td>
<td>I found out that it has a lot to do with pressure.</td>
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<td>How well do your findings support your original idea?</td>
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<td>What do you now think is the cause of the problem? (i.e. have your ideas changed?)</td>
<td>I still feel the same way.</td>
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<tr>
<td>What do you think should be done about the problem?</td>
<td>I think they should band drugs.</td>
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**What problem did you research?**
We researched on Fitness and Health. Mostly on people who smokes.

**If I told you that I don't believe the problem exists, what would you say to convince me?**
Well, we did a survey and the results of it proves that the problems does exists.

**What did you originally think was the cause of the problem?**
I originally thought people smoke because they think it's cool. For fitness and health, I thought it's because people don't exercise regularly or that they eat too much junk food.

**What did you find out about the cause of the problem?**
We didn't find the cause for fitness and health. But we did find the cause for people to smoke. Most of the answers said that they smoke because they think smoking is fun, cool, or they are addicted to it.

**How well do your findings support your original idea?**

**What do you now think is the cause of the problem? (i.e. have your ideas changed?)**
My ideas didn't change at all.

**What do you think should be done about the problem?**
There aren't many ways to solve this problem. But if we have more advertisements on TV or have information in the web, people can understand why we shouldn't smoke or will know how to be healthy.
### Individual Summary: Health & Fitness

**Created By:** Everyone  |  **To:** Everyone  
**Research Group:** Fitness & Health  |  **Subject:** Health & Fitness  
**Date/Time:** 03/27/98 10:46 AM

**What problem did you research?**
I researched about how and why some people are unhealthy and overweight. And also why and how some people are healthy and fit. How they became what or how they are now.

**If I told you that I don't believe the problem exists, what would you say to convince me? (use your findings)**
I would show you the sources that I have found about this problem to prove my point. I have found that there are people who don't take care of themselves and there are some who does.

**How well did your findings prove that the problem exists?**
I thought that the problem was because most overweight people had a big appetite and they were too lazy to find a cure. Also I knew that some wanted to try but couldn't concentrate enough.

**What did you originally think was the cause of the problem?**
People were overweight and unhealthy because they were sick and had a disease. Some other people were like that because they got into habits like smoking, use of alcohol etc. They became unhealthy but most of them wanted to change and half of them did something. The cause of the problem exactly was that they didn't start worrying about their health when they were supposed to.

**How well do your findings support your original idea?**
As I have found out the causes of the problem in my report, that is what I think now is the problem. People didn't get enough exercise and encouragement towards their change on their health. Since I have found out about the causes of the problems, my idea towards this matter stays the same as my findings.

**What do you now think is the cause of the problem? (i.e. have your ideas changed?)**
I think those people who has a friends or a family member or even someone they know, has a problem on their health, they should encourage them to see a doctor and to get enough exercise and also to do something to find a cure. Because they should not wait or waste time.
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**What problem did you research?**

I researched drugs and the cause of its use.

**If I told you that I don't believe the problem exists, what would you say to convince me?**

I'd ask you to take a look at your Parkdale community at night and try to say you didn't see anything wrong.

**How well did your findings prove that the problem exists?**

I thought that stress was the cause of drug abuse.

**What did you originally think was the cause of the problem?**

It wasn't what I thought it was. I was partly correct.

**What did you find out about the cause of the problem?**

I think it is a combination of things, and stress is one. It isn't stress specifically, but it still is part of cause of use.

**What do you now think is the cause of the problem?**

I think the community should open their eyes and look at what is going on in our schools and what is going on in those dark alleys behind our houses and take a stand. Say, "No! I won't allow in my neighbourhood!!!!"
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**What problem did you research?**

I researched about drugs and how it's caused.

**If I told you that I don't believe the problem exists, what would you say to convince me? (use your findings)**

I'd ask you to walk through the Parkdale area at night and try to tell me that you didn't see anything.

**How well did your findings prove that the problem exists?**

I thought the cause of drug abuse was caused by stress and it really seemed like it, considering the affect of stress people go through.

**What did you originally think was the cause of the problem?**

My hypothesis of the problem was not 100% accurate, but it still is a problem to some people, just not all people.

**What did you find out about the cause of the problem?**

I think it depends on the person and how someone handles stress. It also is a combination of problems that can lead to drug abuse.

**How well do your findings support your original idea?**

I think that people really need to open there eyes and see what is going on in schools, and in there homes, and there community. They need to be shown the affects of drugs and take a stand to say "No! I won't allow it!"
**Individual Summary: stuff**

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<th>What problem did you research?</th>
<th>I researched drugs</th>
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**If I told you that I don’t believe the problem exists, what would you say to convince me?**

First I will give you all of my research materials then I will tell you to go out and take a good look at your neighbourhood. I will ask you if you know anyone who does drugs and if you say yes that would usually mean that they got the drugs around that neighbourhood. The drugs are usually around the schools at noon and on the streets at nights. If you see people on the streets a lot of the time and they don’t look like they have a home and they usually stay out all night just hanging around and smoking and drink and things like that. And if the look like they have thinks which look to be in value the usually get the money to afford it by selling drugs.

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<th>How well did your findings prove that the problem exists?</th>
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**What did you originally think was the cause of the problem?**

People who didn’t want to go to a job and wanting to do what they wanted to do so they turned to drugs to support themselves. And it led up to the point where people just started to do drugs just to be cool.

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<th>What did you find out about the cause of the problem?</th>
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<td>Question</td>
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<tr>
<td>What do you now think is the cause of the problem?</td>
<td>It was basically the same as to what I thought before. Originally I thought that did drugs because they thought that it was cool. That is true and I also found out that people do drugs and get hooked on it and instead of telling someone they try to suppour because they think if they tell someone they would get in big trouble, so they sell to other kids to make the money and then the other kid gets hooked and does the same thing and the chain gets longer.</td>
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<td>(I.e. have your ideas changed?)</td>
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<tr>
<td>What do you think should be done about the problem?</td>
<td>Personally I think that people should start to clean up their neighbourhood because the drug dealers see that a neighbourhood is all messed up they that people don't care so they think that they can do whatever they want so they bring their drugs to your neighbourhood to try to make money but really all they do is corrupt your neighbourhood.</td>
</tr>
<tr>
<td>What problem did you research?</td>
<td>I researched mostly about prostitutes and what are around them, like std's, condoms, and people that pick them up. Prostitutes are a problem because they spread std's around to other people.</td>
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<tr>
<td>If I told you that I don't believe the problem exists, what would you say to convince me?</td>
<td>If I told you that I would say that you are a stupid moron because everyone knows that prostitutes are a problem in almost every neighborhood. When I did my questionnaire, I found out that all the kids said that prostitutes are big problems in their neighborhood and that at least 1 to 10 prostitutes are in their neighborhood.</td>
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<tr>
<td>How well did your findings prove that the problem exists?</td>
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<tr>
<td>What did you originally think was the cause of the problem?</td>
<td>I thought at first that prostitutes were the cause of the problems and I still think that prostitutes is the cause of the problem.</td>
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<tr>
<td>What did you find out about the cause of the problem?</td>
<td>There are other causes, but I think prostitutes is still the main problem.</td>
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<td>How well do your findings support your original idea?</td>
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<tr>
<td>What do you now think is the cause of the problem? (i.e. have your ideas changed?)</td>
<td>MY IDEA DIDN'T CHANGE.</td>
</tr>
<tr>
<td>What do you think should be done about the problem?</td>
<td>I think we should help the prostitutes by giving them another job, shelter, and some money to help them start their new beginning.</td>
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**Individual Summary: THE NEW INDIVIDUAL SUMMARY FOR *SISSY*\(^1\)**

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<td>Research Group</td>
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<td>Subject</td>
<td>THE NEW INDIVIDUAL SUMMARY FOR <em>SISSY</em></td>
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**What problem did you research?**
We did research on three topics which are: fitness, health, and smoking.

**If I told you that I don't believe the problem exists, what would you say to convince me?**
I would tell you that I have done a survey on these topics and the results showed that the problem(s) do exist.

**How well did your findings prove that the problem exists?**
![Not really](image) I thought the fitness problem was because people didn't care about their weight. I thought the health problem was because people don't eat healthy. I didn't have an explanation for the smoking problem because that was Julie and DiDi's idea.

**What did you originally think was the cause of the problem?**
I thought the fitness problem was because people didn't care about their weight. I thought the health problem was because people don't eat healthy. I didn't have an explanation for the smoking problem because that was Julie and DiDi's idea.

**What did you find out about the cause of the problem?**
We only found the cause for smoking and the people who answered didn't really give us much of the cause of why they do. The most common answers were "I don't know," "It's cool," and "It's fun."

**How well do your findings support your original idea?**
![Not really](image) No, my idea's have not changed, I still think the same thing that I thought in the beginning.

**What do you now think is the cause of the problem? (i.e. have your ideas changed?)**
There is really nothing you could do to help the problem. If the want to smoke that's their problem. If they want to be overweight or eat unhealthy that's what they want to do and no one can really change their point of view.
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<th>Individual Summary: Summary</th>
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**What problem did you research?**

I researched on how many people smoke and how many diseases you can get for no natural reason. What I mean is that people smoke and get diseases by smoking. It is like they want to get that kind of disease. They are looking for trouble.

**If I told you that I don't believe the problem exists, what would you say to convince me?**

I would tell you to go to the web page I described on the research and look how many people start beginning to smoke then talk to me.

**How well did your findings prove that the problem exists?**

Peer-pressure and curiosity

**What did you originally think was the cause of the problem?**

I found out the number of people that start to smoke and that they are smoking. I found out how many people will die of lung cancer this year. I'm very sensitive but I don't feel sorry for them because that's what they wanted.

**What did you find out about the cause of the problem?**

Not really. It is still peer-pressure and curiosity.

**What do you now think is the cause of the problem? (i.e. have your ideas changed?)**

Nothing we can do until tobacco disappear.
**Individual Summary: summary**

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**What problem did you research?**

I did research on drugs.

If I told you that I don't believe the problem exists, what would you say to convince me? (use your findings)

I would probably show you my report on drugs. I would also say that drugs are a problem because a lot of children are using them and that the magazine that I got my info. from had to get it's info from somewhere that dealt with drugs, so it is a problem.

**How well did your findings prove that the problem exists?**

I always thought that the cause of taking drugs was peer pressure and a way to escape your problems, but I never thought that kids sometimes take drugs because they were bored or had nothing interesting to do.

**What did you find out about the cause of the problem?**

I found my research from an article in the Readers Digest. It said that the most common reason why kids do drugs was peer pressure and that kids are afraid of not fitting in so they just do what the people of the group tell them to do. But not all kids do this.

**What did you find out about the cause of the problem?**

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**How well do your findings support your original idea?**

I still think it's what I thought before.

**What do you now think is the cause of the problem? (i.e. have your ideas changed?)**

I think that kids should be taught another way to deal with their problems besides drugs, and they should learn how dangerous drugs can really be. I think with the peer pressure cause it's harder to tell kids what to do because they might be afraid to say no to the group that is pressuring them so I'm not sure about that.