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ABSTRACT

This research effort sought to identify pathways and blockages to flow (the having of optimal experiences) in the daily activities of teachers and students and to develop a critically reflective pedagogy to enhance the probability of flow for teachers and students alike. The critically reflective approach contained elements such as an autobiographical narrative of the teacher's affective response to the classroom experience, fieldnotes and lesson plans, student surveys, and interviews with and diaries from a few selected students. Findings indicate that for the majority of students, school was an enjoyable experience only to the extent that it provided opportunities to be with friends or to participate in sports. Students cited numerous reasons that they did not enjoy school, most of those reasons stemming from control issues including excessive work load, and little control over the content or conduct of classes or the use of time. Many students mentioned stress derived from the behavior of both their fellow students and teachers. A liberal interpretation of the surveys indicates that approximately 1/3 of the students exhibited symptoms suggestive of flow or optimal experience; for approximately 1/2 of the students, anxiety pervaded their daily school experience. Seventeen percent of the students suffered from boredom. Contains 20 references. (Author/JRH)

Flow Theory as Construct for Analyzing Learning Environments in a 7th-Grade Science Classroom

by
Steven E. Boyer

FLOW THEORY AS CONSTRUCT FOR ANALYZING LEARNING ENVIRONMENTS IN A 7TH-GRADE SCIENCE CLASSROOM

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Abstract

School rarely provides optimal experiences, enjoyable experiences accompanied by a sense of fulfillment and well-being. As a teaching intern, Boyer sought to identify pathways and blockages to flow (the having of optimal experiences) in the daily activities of himself and his students and develop a critically reflective pedagogy to enhance the probability of flow for teacher and student alike. The critically reflective approach contained the following elements: (a) an autobiographical narrative of the teacher's affective response to the classroom experience, (b) fieldnotes and lesson plans, (c) student surveys, and (d) interviews and diaries of a few selected students. In this presentation we focus on factors that inhibited or promoted an optimal learning environment for the students in a seventh grade science classroom.

Relationships and sports were the most enjoyable experiences for students. For the majority of students school was an enjoyable experience only to the extent that it provided opportunities to be with friends or to participate in sports. Students cited numerous reasons that they did not enjoy school, most being related to control issues. They frequently found the work load excessive. They sensed that they had little control over the content or conduct of classes or the use of time. Many students mentioned stress, including the behavior of both their fellow students and teachers. A liberal interpretation of three surveys indicated that approximately one-third (31%) of students exhibited symptoms suggestive of flow or optimal experience. For approximately one-

half (51%) of the students, anxiety pervaded their daily school experience, while 17% of students suffered from boredom.

Introduction

Numerous teachers, educational researchers, and psychologists have linked student enjoyment to the success of the educational process (Montessori, 1912; Dewey, 1938; Duckworth, 1987; Csikszentmihalyi, 1990b, 1993a; Gardner, 1990; Larson & Richards, 1991a; Whalen and Csikszentmihalyi, 1991). An enjoyable learning environment relies on intrinsic motivation and supports the student in guiding his or her own inquiry, with minimal interference from the teacher (Montessori, 1912, 1948, 1967). If the educational environment is designed to reflect student experiences and interests, children will enjoy education to an extent that they will voluntarily return to it again and again, leading to a lifetime of learning (Montessori, 1912, 1948, and 1967; Dewey, 1938; Duckworth, 1987). The link between enjoyment and successful education was recognized at least as early as the middle 19th century (see Tolstoy's writings, edited by Pinch & Armstrong, 1982), but the concepts of "flow" or "optimal experience" (Csikszentmihalyi, 1990a) frame enjoyment within the modern psychological theory of intrinsic motivation (Csikszentmihalyi, 1990b).

Objectives

Boyer (1996) initiated this inquiry to evaluate the emotional response of his students and himself to a typical 50-minute session and to examine the conditions under which they individually and collectively experienced "flow" and its antithesis, "psychic entropy" (Csikszentmihalyi, 1990a). During the latter semester of a full-year internship, his goal as a teacher was to assist students in constructing optimal experiences by integrating the inquiry with his teaching practice. Being a new teacher, he sought to ease his transition into the classroom and minimize any difficulties that might arise.

Four principle questions guided the inquiry: (a) what brings joy and satisfaction to students, (b) what brings joy and satisfaction to the teacher (in this case a new intern), (c) how do the satisfaction of teacher and students relate, and (d) how can the results be used improve my classroom practice and provide an environment that enhances optimal experiences for both educator and students? In this presentation we will focus on the first of these questions.

Theoretical Framework

Csikszentmihalyi (1990a) maintains that each of us has the freedom to control our subjective reality and "Those who take the trouble to gain mastery over what happens in consciousness . . . live a happier life" (p. 23). Those who successfully control their own consciousness frequently attain a state of flow; those who do not experience psychic entropy (Csikszentmihalyi, 1990a). Flow is the having of optimal experiences, experiences in which information is congruent with goals and "psychic energy" flows effortlessly. A person in flow becomes so involved with the undertaking that nothing else seems to matter. Sense of time is lost and the individual becomes one with the activity. By living a life in flow, individuals grow into "complex selves", who successfully balance individual needs and desires (differentiation) with the needs and desires of others (integration).

Differentiation is a "movement toward uniqueness, toward separating oneself from others", while integration is "a union with other people, with ideas and entities beyond the self. . . . [The complex self is] one that succeeds in combining these opposite tendencies" (Csikszentmihalyi, 1990a, pp. 41-42)

Another aspect of the complex self is the balance that one achieves between the difficulty of tasks to be tackled and the skills that one possesses (figure 1). If one is in the anxiety field, faced by challenges too great for one's abilities, there are three choices: (a) improve one's skill level through practice or training (path 1 in figure 1), (b) decrease the level of difficulty by reformulating the problem or pursuing another activity (path 2),

or (c) a combination of training and reformulating the problem in terms of attainable tasks (path 3). Similarly, if one is bored, one can (a) increase the level of difficulty of the task (path 4), (b) allow one's skills to atrophy through disuse and then attempt the activity again (path 5), or (c) some combination of these two (path 6).

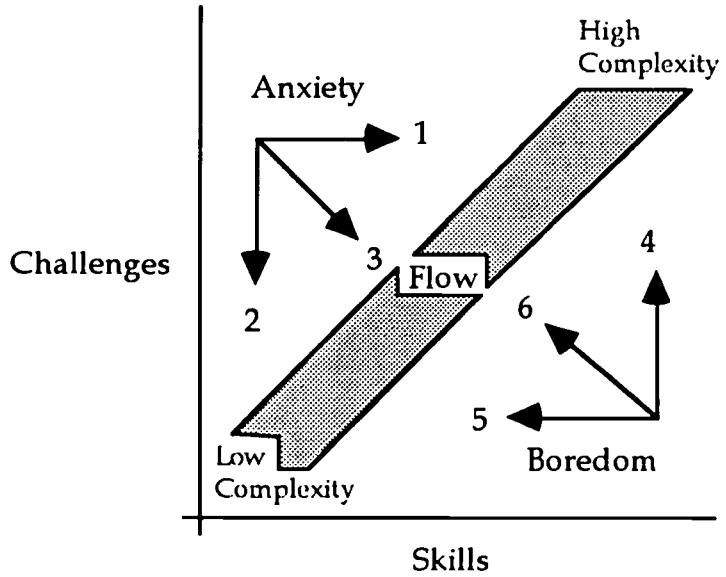

Figure 1. To be in flow, one's skills must be adequate for the challenge. There is a delicate balance between boredom and anxiety. The person in flow attains a higher order of complexity by attempting tasks of increasing difficulty and training to meet new challenges. Modified from Csikszentmihalyi and Larson (1984, figures 13.1 & 13.2).

Paths 1, 3, 4, and 6 lead to higher complexity of self and thus enhance the probability of attaining enjoyment and a sense of fulfillment. Paths 1 and 4 provide optimal growth. If anxiety is modest, one can simply work to improve skills (path 1). If one is bored, the best way to attain flow is to take on tasks that present greater challenges (path 4).

Reliance on paths 2 and 5 alone lead to stagnation. However, if one is "in way over one's head" and anxiety is very high, one may reformulate the task in attainable chunks or try some other activity, and then take on challenges of increasing difficulty as one's skills improve (paths 2 and 3).

Those who strive for higher orders of complexity learn to enjoy the challenges that life presents. "Whenever we choose a goal and invest ourselves in it to the limits of our concentration, whatever we do will be enjoyable. And once we have tasted this joy, we will redouble our efforts to taste it again. This is the way the self grows" (Csikszentmihalyi, 1990a, p. 42).

Since flow is enjoyment that leads to the growth of the self, Csikszentmihalyi's theory has important implications for education. Flow theory has the potential to improve the classroom experience for both students and teachers. However, to engineer the classroom for the enhancement of optimal experience, the teacher must know the prerequisites for flow.

Prerequisites for Flow

A flow activity must have one or more of the following characteristics, or the individual must be capable of perceiving the activity in these terms. Combining the flow theory of intrinsic motivation (Csikszentmihalyi, 1990b, 1993a) with motivational design of instruction (Keller, 1983), these prerequisites can be simplified under three headings: (a) challenges (incorporating goals), (b) means (including skills), and (c) feedback (Rezabek, 1994).

Challenges and goals. The ultimate goal is clear and attainable. The challenge must be great enough to provide for growth but not so great as to cause anxiety. There is a balance between anxiety and boredom. If the challenge is too great for one's skills, the activity produces anxiety; if the challenge is not great enough, boredom results.

Of course, one must first have the desire or motivation to pursue the activity. This desire reflects a willingness to accept control over one's own consciousness. A person in control is "proactive" and takes an "in-side out view" (Covey, 1989).

Means or skills. The activity requires skills one possesses or can reasonably develop during the conduct of the activity. As mentioned in the preceding paragraph there must be a balance between challenges and skills.

Feedback. In order to encourage the participant, there must be an ongoing system of feedback. The participant must have a sense of control and know how he is doing in order to readjust the activity and maintain a balance between anxiety and boredom. One form of control is the planning of intermediate tasks, that are perceived as attainable. The activity should provide immediate feedback as these tasks are completed.

The previous three categories are ones most often within the power of the student and teacher to regulate. However, there are two additional factors, sense of control and freedom from distractions (Csikszentmihalyi, 1990a) .

Attaining control. Although control was mentioned in the preceding paragraphs, it deserves discussion in its own right. It is a factor well within the teacher's ability to regulate. Simply by giving students greater control over the learning process, what is to be studied and how, students gain a sense of control and responsibility for his or her own learning. As the students assume greater responsibility, the teacher's load is reduced and the likelihood of teacher flow is similarly enhanced. The teacher is "freed up" to focus on individual needs, thus providing additional avenues of flow for all students.

Freedom from distractions. The activity should be pursued in an environment free of distractions, permitting one the ability to concentrate on tasks. Attaining an adequate level of concentration, one is able to focus on what can be controlled rather than worrying about factors over which one has no control. This removes the self as a central focus of the activity and shifts focus to the task at hand.

Freedom from distractions is enhanced by smaller class size, a factor that may not be within the realm of the teacher to regulate. However, the teacher may have some control over how the classroom is configured and what activities are conducted concurrently.

Time itself may be a distraction. If an individual feels that he or she does not have time to complete a task, attention is diverted from the task to the clock. Energy will be drained in monitoring time and evaluating progress, rather than in complete involvement

in the activity. Anyone who has every frozen during the taking of a timed exam is well affair of this effect!

The teacher may attempt to organize the classroom and instruction so as to enhance the probability of flow. However, in order to gauge success, the teacher must be able to recognize the symptoms of flow.

Recognizing the Symptoms of Flow

There are several symptoms frequently mentioned by individuals while engaged in flow activities: a sense of control, deep and effortless involvement, unawareness of any distractions, distortion of the sense of time, loss of concern for self, and a desire to repeat the activity (Csikszentmihalyi, 1990a). It must be emphasized that not all these symptoms need be present during what one would describe as an enjoyable activity.

A sense of control and mastery. There is a feeling that one's skills are adequate for the challenge at hand. One is not overly anxious of the outcome.

Deep and effortless involvement. One is fully engaged in the activity. An awareness of effort is absent, or the effort does not seem excessive. The senses of "control and mastery" and "deep and effortless involvement" are very closely related and likely to accompany one another.

Unawareness of any distractions. Even if the potential distractions exist, one is not aware of them. One is so involved in the activity, that nothing else intrudes on the consciousness. As mentioned previously, the teacher can enhance the ability for flow by regulating the classroom environment to remove potential distractions. However, if a child is engaged in an activity that is of true interest to that child and she has freely chosen that activity, she may pursue it without any hindrance from what otherwise would be perceived as a distraction.

Distortion of the sense of time. All awareness of time is lost. Time may seem to expand or contract, but is of little interest or importance. The doing of the activity is all that matters.

Loss of concern for the self. Related to distortion of time and deep involvement is the loss of concern for the self. With the activity the total focus, one becomes as unaware of the oneself as one does of time. One simply becomes one with the activity. However, as Csikszentmihalyi (1990a) notes, a paradox of flow is that the sense of self emerges stronger after an optimal experience, even though one loses the sense of self during the experience.

Desire to repeat the activity. The activity is so enjoyable or fulfilling that the individual will pursue it again and again. Flow becomes a form of positive addiction.

Few of these symptoms can be monitored by observation alone. Conducting survey, interview and classroom forums allow the teacher to better gauge the success of his or her efforts. Such methods allow the teacher to become critically reflective and responsive to student needs (Bowers & Flinders, 1990; Brookfield, 1995).

Inquiry Design & Data Sources

Boyer (1996) conducted this inquiry concurrent with his responsibilities as a teaching intern. With a seventeen-year career as an earth scientist in academia and industry, he was new to both qualitative research and teaching at the middle school level. However, as his internship proceeded, Boyer (1996) recognized that qualitative methods (Bogden & Biklen, 1992) best served his efforts to become a reflective and responsive teacher.

Boyer observed and interacted with four class periods of seventh graders in a general science classroom. The junior high school, located in a suburban, densely populated area of south Puget Sound, reflected the diverse cultural, ethnic, racial and socio-economic make-up of the surrounding community (Boyer, 1996).

The inquiry contained four segments: (a) Boyer's reflection on his teaching practice and affective response to events in the classroom; (b) observation of students and their reactions to his instruction ; (c) surveys of student attitudes regarding happiness and school; and (d) interviews with a few key students,. Corresponding to these four inquiry elements, the data consisted of: (a) Boyer's own journals, (b) field notes and lesson plans,

(c) questionnaires and surveys directed toward the students, and (d) interviews and diaries of selected students. In this presentation we will focus on the student experience, utilizing student questionnaires as the data source.

Student Surveys and Analysis

Boyer (1996) conducted three surveys to determine what constituted enjoyment for students and what role, if any, school played in providing enjoyable experiences. Through these surveys, he intended to gain insights to guide his future educational practice. Survey #1, conducted on the third day of the second semester, asked students to describe experiences they had found enjoyable and fulfilling. Only a few students mentioned school, but they usually did so because it provided interaction with friends. So, in survey #2, nearly three weeks later, Boyer asked students why they had not mentioned school, and if there was anything about school that they did find enjoyable. Survey #3 asked for an assessment of the course just prior to the mid-semester spring break. These three surveys ranged from enjoyment in general, through enjoyment at school, to a specific critique of their experiences in the science classroom.

The discussion of each survey includes extracts from student responses. These transcriptions retain student spelling and punctuation errors.

Survey #1. In the first survey students were asked to describe experiences that they found enjoyable, enjoyable experiences that also made them feel good about themselves. Not wanting to influence the students answers or place value judgments on their responses, Boyer provided no information about flow nor did he explain that the survey was intended to evaluate what constituted optimal experience in their lives. The survey was conducted on the third day of school, Friday, 2 February 1996.

Of approximately 108 students in the four periods surveyed, 93 responded. Most of the students provided one or two responses, although a few mentioned as many as five types of experiences that they found enjoyable. Thirty-eight (38) students mentioned only one activity in their response, whereas 55 noted 2 or more activities or experiences

that had provided them enjoyment. Thirty (30) students named 2 activities, 15 named 3, 6 students named 4 activities, and 4 students mentioned 5 or more activities or experiences.

The responses fell under nine categories: (a) relationships, (b) sports, (c) passive activities, (d) productive activities, (e) recreation and outdoor pursuits, (f) the arts, (g) mechanical activities and interests, (h) school and (i) other. The first seven of these, arranged from highest to lowest frequency of response, correspond to similar categories established by Csikszentmihalyi and Larson (1984, table 12.1, page 242). I intentionally grouped the responses under the same categories, so as to provide comparison with an existing study of flow in the adolescent children (figure 2).

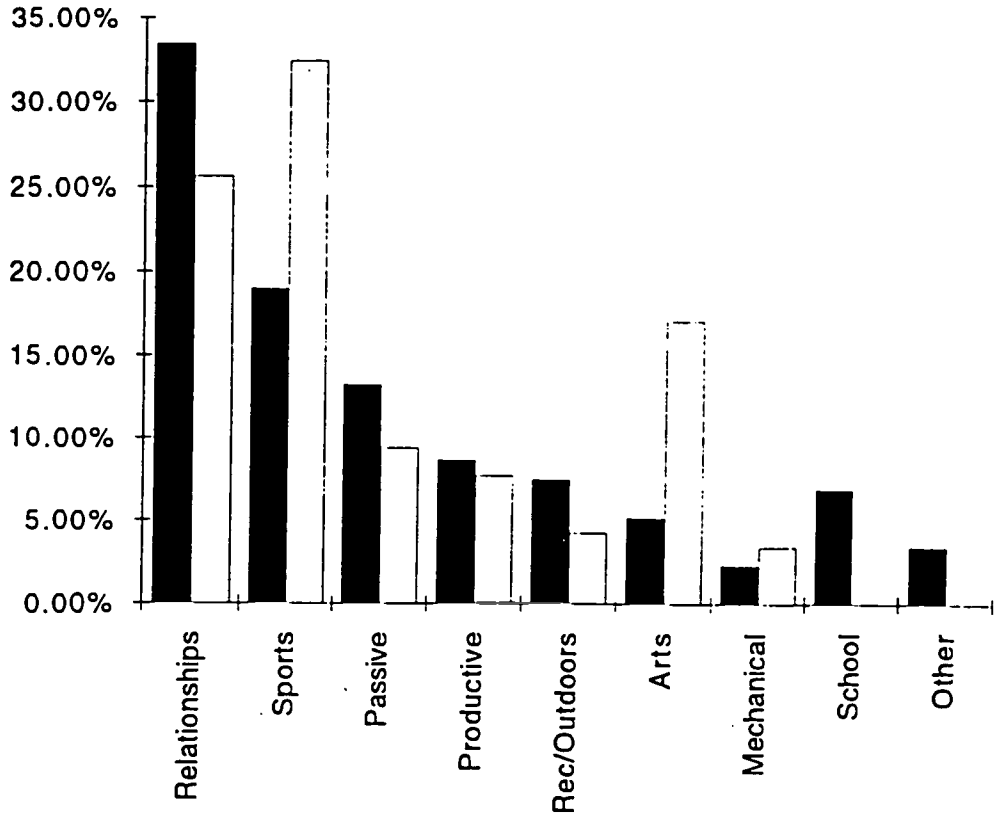

Figure 2. Comparison of responses in survey #1, black bars, with similar survey conducted with high school adolescents by Csikszentmihalyi and Larson (1984, table 12.1, p. 242), indicated by white bars.

Various activities mentioned under each of these categories are broken out in the following table.

Table 1
Responses to Survey #1.

Category	Activity	N	Total
Relationships	Friends and gangs	38	
	Family	8	
	Boyfriends/girlfriends	8	
	Pets and animals	4	
			58
Sports	*Minimal contact team sports*: basketball, volleyball, baseball, and soccer	12	
	Heavy contact team sports: football and ice hockey	5	
	Gymnastics and swimming	8	
	Roller and ice skating	2	
	Wrestling	1	
	Tennis	1	
			33
Passive	TV	6	
	Radio	6	
	Music, listening	5	
	Movies	4	
	Sleeping	2	
			23
Productive	Shopping	7	
	Learning & Reading	6	
	Gardening & Making things	2	
			15
Recreation	Theme parks, Carnivals	6	
	Travel	3	
	Camping	2	
	Video games	2	
			13
Arts	Dancing	3	
	Drawing	3	
	Writing	2	
	Photography	1	
			9

Mechanical	Autos & boats	2
	Computers	2
		4
School	Science & social studies	5
	Hands-on activities	5
	Movies and videos	1
	Physical education	1
		12
Other	Antisocial	3
	Collecting things	2
	Food	1
		6

Relationships for the most part involved classmates and other friends, including boyfriends and girlfriends. However, only a few students mentioned boyfriends and girlfriends. Second most frequently mentioned were family members, and then animals and pets.

Included in the subcategory of relationships with friends are "talking on the phone" and "going to the mall," excluding responses that specifically mentioned "shopping." Typical was this girl's response. "The thing I like most to do is talk on the phone. I can talk up to 7 hours a day. I also like to sit in the dark and listen to music."

Several responses involving family members. "I really enjoyed when my baby brother was born his name is Jacob. He is so cute & funny, I love him so much. He has a different dad but I don't care."

This being a transient population, past friendships were often mentioned. "Going back to New York and being with friends and go to carnivals. Being with my friends in Wash. talking on the phone and just kikin' it."

Two very close friends in period three were "Casper" and "Baby Blue". The two were seated beside one another throughout the semester. They were inseparable, and any interaction Boyer had with one had an impact on the other. While preparing this analysis, Boyer gained an insight into their relationship for the first time. They are both of Pacific Island heritage.

> What I found interesting was learning about what my Island Home believed in. Hawaii I'm from there. I can not explane, but there was a godesses Malano'a She lives under a stone and is angry because there are people building roads through here presents many car recks have ben done, and people in Hawaii believe that she has done it because she is mad. I find it interesting to learn about that stuff. Like- Egypt gods/godeses Greek Gods/Godesses Romes, Hawaiis, Chrischeanity, so on, so on. ("Casper").

> I enjoy dancing the Samoan dances because it shows a lot of my personality who I am when I perform it makes me feel good because I know I'm honoring my island. If I ever go back home I know I won't come back. What I also find interesting is my culture. Samoa has a lot of different things that you can do. I learned a lot of my culture I learned the language how they dance and their daily life. ("Baby Blue").

These were the only two student to mention an ethnic and cultural relationships, so we included their responses under relationships.

A few boys noted happy relationships with girlfriends. "What makes me happy is to have a friend like someone and if I didn't have her I don't know what I would do because she's always there for me." Not all relationships resulted in happy experiences, especially for the girls. Although, the survey asked for happy experiences, most responses concerning relationships more often reflected psychic entropy. Two girls provided similar responses.

> What make me happy, or what would make me happy is to have the person I love not made at me and just to say he loves me has much as I love him. This would make me happy. Until then I will not really be happy. When I'm with my friends I'm happy, but I know he's still mad at me. That makes me uncomfortable.

> The most exciting time in the last 2 weeks was yesterday! There's this boy _____ I like and he is in the next P.E. class and I mean he's so bomb! he's a little red but he's got the prettiest eyes. I get to see him every day. My fantasy is that maybe later not now that he would "kiss me". But theres this 9 ninth grader Greg he is "the bomb". He won't go with me because I'm a "seventh grader" that sucks! Oh well.

Sports were mentioned frequently by boys and occasionally by girls. At least one, a student with a very poor academic record, was relying on sports as his future vocation.

> I favoite thing to do is to play basketball for Junior High, High school, college, than the N.B.A that is my dream I always wanted to because I love this game of basketball and I also got the skills to pay the bills.

Another boy with a somewhat better academic record, but far less accomplished than his statement would indicate, also had a very high opinion of his sports prowess.

> My name is _____ and I'm 13 years old and I play lots of sports like baseball & hockey. I have lots of friends and I'm cool. I'm really good at baseball. I took my team to the testaments and got 2nd place and _____ struck out 8 times out of 8 trys. I'm a good student.

Students frequently related their interest in sports to their friendships. For those who did so, entries were made under both friendships and sports. The following response describes an experience that would probably qualifies as "flow".

> I like to swim. I feel good about swimming because I used to know how to swim when I was 1, 2, or 3. I forgot how to swim when I was 4 and then taught my self how to swim in a hot tub when I was 7 or 8. I taught myself how to dive and I helped my best friend learn to swim better. She used to not be able to go in a deep pool but now she can because I helped her learn to swim. No she's a great swimmer. I felt good about that. My mom and dad helped me a little to swim.

In addition to writing about their friendships, some of those mentioning sports also noted their interest in hands-on activities and a lack of interest in contemplative endeavors such as writing and taking notes. An interesting response was provided by "E-man", a relatively good and very likable student, whose abilities far exceeded his efforts. His response exuded gusto and a love of life and his response exemplifies flow.

> I'm an athlete & I like playing a lot of sports & games. I hate to do a lot of writing like taking notes etc. . . I like handson activity. I like having a lot of friends. Mostly I like contact sports when you get hurt. I fell no pain because I'm Bung Bung Jimmy. Superhero Everybody that knows me thinks I'm very crazy & I don't have a life. But who cares. I'm very competitive. I was born (date) and I'm 13 now. The end.

Two girls, the top two students in the class, had a common interest in sports, reflecting their friendship.

> I love to play tennis. I was on the tennis team this year. I played doubles. My mom & dad take me to practice at C.P. I've been playing for about one year. Mr. _____ {Boyer's mentor teacher, who is also the tennis coach at Sound Jr. High} helped me learn how to keep score. Tennis is hard work, but is still fun. I also like to read.

> I enjoy playing volleyball. Next year I plan to make varsity. I like making things because I am going to be an architect. I like listening to steel drum bands at C.P. When I go there I will try to get in to the band.

For numerous students passive activities provided greatest enjoyment. These activities included watching TV, listening to radio and music, watching movies, and sleeping. Using the appropriate code name "Pepsi", the following girl gave a typical response. "My dream would be knowing that I have to not go to school. And to watch T.v. and drink pepsi all day and eat anything I want while having a maid clean my room."

Productive activities ranked fourth with 15 students mentioning activities that might broadly be considered productive. As did Csikszentmihalyi and Larson (1984), we placed shopping in the "productive" category. However, this entails a value judgment with which we were not necessarily comfortable. Nevertheless, many would not consider shopping to be necessarily productive. In some instances it might better qualify as a form of entertainment. Also, in many instances, friendships with fellow shoppers and the opportunity to meet new people seems to be a more important aspect of malls than is shopping. An example is the response of "Lil' Sweetstuff". "I enjoy shopping at the Tacoma & Lakewood Mall with my closet friends and trying on clothes and meeting new people! & I love talking on the phone day & Night & using my 3-way!"

Another student mentioned her enjoyment of planting and working with her hands, as well as dancing. "I like to plant flowers. I like to pain saramics, and I like spending time with my family and my freinds. I like to go ballroom dancing." Dancing and ceramics could also have been included under the arts.

A few students enjoy recreation and outdoor pursuits, such as camping, going to carnivals and fairs, and engaging in various other outdoor activities.

Students mentioned activities in the arts at lower numbers than all but two other categories in the survey. However, for these few students it was a major source of enjoyment, pride and fulfillment, as reflected in this girl's comment. "Something I enjoy doing is writing short stories. I have a whole bunch of stories that I have wrote. I also

like to take pictures of things. But the thing I like most is reading." One boy, noted, "An activity that I enjoy is art. When I do art it gives me a sense of pride!"

Mechanical activities and interests were mentioned by only four students. When viewed from a social context, some of these activities were positive and some were negative. One boy enjoyed helping his dad with the car. "I change my dad flat tire on is car. Help my dad put a part in is car. I hope it snows agan. For we don't have to go to school for two week." Another preferred to wreak havoc on the internet. "I hacked into a local bb and put virus on their system. It was cool because it took three days to figure out! I also made a program that removes password from any program."

Students rarely mentioned school. The few that did, did so in a negative way, usually commenting on the behavior of teachers. Two from one class mentioned the same teacher. Judging from the similarity of the responses, it is not surprising that these two girls sit next to each other.

> I am writing about [a teacher]. I hate her she is allways saying something about some body one day I did not know it was home work and it was a puzzle then she ~~going~~ told me I got it. I hate her mean rude.

> There's this teacher of mine she is rude to just a couple of people and she is always mean to them and then the people she's nice to she is always nice and never mean. She is my 3rd per. teacher. Please don't tell her ! ! ! like Mrs. _____ see U later.

Students who positively mentioned school in a positive sense often described hands-on activities that they had enjoyed in the past. This girl's response indicates that she has experienced instruction based on the theory of multiple intelligences (Gardner, 1983, 1993).

> I enjoy lots of hands on activities. When I was in 4-5- and 6th grade we did almost every thing hands on activities, like; We went to the rain forest, we diesected feerdlized eggs, owel pellets ect. We worked with grams to messer wieght and use water, surup, salt ect. we even cooked, eveyone loved that. Being able to work with my hands helps me learn esyer. Because im a kinesedic learner.

Another girl, "Kee-Kee" related hands-on activities to working with her friends. "I like disecting things. I like experamenting with liquid fluids and solid things. I like playing sports. I like talking to friends and working with them." It was common for

students who enjoyed hands-on activities to also mention sports in their responses to survey #1.

Analysis of Survey #1. In both this study and the one by Csikszentmihalyi and Larson (1984), relationships and sports were most frequently mentioned. However, the relative importance of these two categories was reversed for the two studies, with relationships being more important than sports for my students. The other prominent difference was the role of the arts for kids in the two surveys. In the Csikszentmihalyi and Larson (1984) study, the arts were the third major category, following only sports and relationships. However, in my study the arts ranked sixth in importance.

This difference may reflect the socio-economic factors and age of the students. Csikszentmihalyi and Larson (1984) initiated their survey with 80 students drawn from senior high school, distributed evenly among the ninth, tenth, eleventh, and twelfth grades, while I conducted my survey in a seventh grade classroom. The kids in our study came from broken families and with large numbers of single-parent households and military families, the students represent a rather transient population. Although the students in the Csikszentmihalyi and Larson (1984) study, came from a similarly diverse population, the family structures seemed more tight-knit.

Boyer's mentor teacher noted that friendships and school provide the only real family some of these kids have. So, perhaps friendships take on greater importance than they would otherwise. Indeed, sports were frequently mentioned in conjunction with friendships. So even though sports were mentioned as enjoyable activities, the enjoyable aspects went beyond the sports activity alone. Sports provided a means of solidifying and fulfilling their friendships that might not be available to them elsewhere.

These surveys and associated information collected over the course of the semester are insufficient to prove that any of these students were indeed experiencing "flow" as described by Csikszentmihalyi (1990a). However, there was one response that stands out vividly. The following response was accompanied by a sketch of a knight in combat with

a dragon. "Yesterday I felt free I felt like I could do anything I wanted. I could be anything I wanted. It was a feeling and sence of peace. Come over me."

A very few students seem to have multiple outlets for enjoyment in their lives, enhancing the possibility that they frequently experience flow. One such response came from a relatively quiet and reserved girl from the third period. "1 Going on a family vacation in the summer 2 Seeing my cousins every now & then 3 going to fairs & carnivals 4 going camping 5 being with my friends 6 being with distant family members."

On the other extreme, reflecting psychic entropy, was this girl's anonymous response. "I don't have anything that makes me happy realy. My freind make me happy sometimes because there funny. Beating my brother up is realy funny."

The latter was one of at least two students that did not mention any enjoyable activity. Their responses went directly to the negative role of school in their lives.

For these students and many others in the survey, school appears to be an overriding factor in prohibiting flow experiences in their lives. Of course, it is possible that they do experience flow in other aspects of their lives, but this survey served as a convenient lightening rod for their experiences about school.

Survey #2. Reading through the responses to survey #1, Boyer (1996) noted that the students had rarely mentioned at activities or experiences at school as having given them enjoyable experiences or having made them feel good about themselves. Finding this both interesting and troubling, in the second survey he asked students to explain why school was not mentioned in the previous survey, and for those few who did mention school, why was school enjoyable for them. This survey was conducted on Wednesday, 21 February 1996, 19 days after survey #1. Only two class periods participated in this study, whereas the previous survey involved four classes.

Between the two classes, 38 students responded with 86 comments, 57 being negative and 29 positive. Arranged and ranked, the comments fell under 6 general

categories: (a) work load (including classwork and homework, which was thought to be too difficult or too frequent), (b) conduct and content of classes, (c) time factors (such as length of the school day) and freedom of movement, (d) various stressful elements in the student's day, (e) teacher attitudes and behavior, and (f) specific classes. In Table 2, the negative responses are tabulated under general categories, which are broken down into more specific responses in Table 3.

Thirteen of the responses dealt with boredom. Eleven students commented that they were generally bored or bored with the subject matter. Two students found the teacher to be boring.

Table 2
Responses to Survey #2

Attitude	Category	N	Total
Negative	Work load, excessive	13	
	Conduct of the classes	12	
	Freedom & time concerns	10	
	Affective or stressful elements	8	
	Teacher behavior and attitude	7	
	Specific classes	4	
	Unspecified and general	3	57
Positive	Being with friends	11	
	Education, learning	4	
	Experiments	2	
	Breaks & lunch	2	
	Being with or seeing members of the opposite sex	2	
	Sports	2	
	Specific classes (Art & Health)	2	
	Being challenged	1	
	"I'm a good student"	1	
	Nice teachers	1	
	Unspecified "love" of school	1	29
Total responses			86

Table 3
Negative Responses in Survey #2

Category	Comment	N	Total
Work load	Too much work (unspecified)	6	
	Homework	4	
	Tests	2	
	Taking notes	1	13
Conduct of classes	Subjects boring	11	
	Too many videos or movies	1	12
Freedom & time	Too many hours	4	
	Unable to move about or talk	2	
	Too few breaks	2	
	School is required	1	
	Getting up too early to go to school	1	10
Affective or stressful elements	Getting in trouble	2	
	People are scary	1	
	Too hard	1	
	Stressful	1	
	Fights	1	
	Loud or behaving cohorts	1	
	Not good at school	1	8
Teacher behavior	Rude or inconsiderate	4	
	Boring	2	
	Shows favoritism	1	7
Specific classes	Physical education	3	
	Math	1	4
Unspecified	School or staff in general	1	
	Unspecified hatred	2	3

Total negative responses 57

Work load and conduct of the class received the greatest criticism, being mentioned in 13 responses. Six students thought there was too much work but provided no specifics. Four complained about the amount of homework, the difficulty of the homework, and its lack of relevance to the lessons. Surprising to me, only 2 students complained about tests and only one thought there was too much note taking in school.

Boredom was central to the twelve responses that related to conduct of the classes. Eleven mentioned boredom specifically and 1 noted that she did not like videos. The dislike of the videos may also have been related to boredom. This response was typical. "It 's just plain Boring! too much work! some teachers are boring!! Gym sucks!" Boredom for many students seemed to stem from insufficient student-initiated, hands-on activities.

> I like doing experiments. I hate writing notes and watching movies on science. I'd rather be doing something like chemistry. I like coming to school just to be with my friends. I don't like this school because of the people. They take things to seriously and personally. I don't like the way they run this school.

In the absence of hands-on activities, friendships seemed to be the only factor drawing this student to school.

For 10 students freedom & time concerns were the major issues that prohibited the enjoyment of school. "I don't like school because . . . I don't get enough time off we are here to long. we cant stand up. can't talk, have to do work all the time. I like school because . . . You get to see your friends change." As will be discussed later, friends were the only saving grace of school.

In addition to being boring and limiting freedom, school brought affective or stressful elements to the minds of many students.

> Schools scary when you get in trouble. I have lots of friends but its boring . I feel scared a lot because people are scary. Bye-Bye. Sir. School is so scary I hate it [The following erased: "I have not friend only ____."]

The response of student #4.10 indicates that fights and mean teachers were the stressful elements for her. "I don't like school because to many fights, teachers are mean, too much work."

Many of the responses about stress did not provide specifics, although comments, such as this one from "Money Girl", indicates that difficulty with assignments and tests are the source of stress. "I dont like school cause it stresses me and sometimes its hard."

In many cases the stress related to tests or homework. Tests were often too long or thought to be too difficult. Homework impinged on student control over what they considered to be their free time.

> I don't like school because of work, test, and homework. I really hate is that test. If you got an D or C and F it [word indecipherable] you whole grades. One thing I do like is not having homework or test. ("Cats Eye",).

For some, such as the following very good student, the behavior of fellow students, as well as boredom, diminished her enjoyment of the classroom and presumably imposed unnecessary stress.

> School is okay. But some of the classes are extremely boring, because it is so loud and no one listens to the teachers. Some people just don't get the picture that its not cool to be rude to teachers and get bad grades.

When describing why school was not enjoyable, 7 students mentioned teacher behavior and attitude. "Because I don't like some of the other teachers. And some teachers don't have to be fun and teach right." ("Baby Blue"). These responses are closely related to those involving stressful elements for kids. I suspect that their dislike for some of the teachers reflects the stress that these relationships impose on them.

Three of the negative comments were not specific. This comment from a male student was typical. "Why school wasn't menchoned School Bites!!!!"

Being with friends was the most often cited positive element of school. It was mentioned by 11 students. "Its both because sometimes I like school. And other times I dont. Like I love socilizeing, I hate tests. I love hands on activities. Thats it." Learning itself could also become enjoyable when hands-on activities were the dominant learning mode. Owing to the degree that such activities were indeed available, "Daisy" seemed ambivalent toward school.

Only 4 students specifically mentioned education and learning as an important reason for being in school. Boyer's best student, Julius wrote, "I like school because you discover and learn things everyday. The only reason why I didn't write because it just didn't pop in my mind. I love school and it's great." The number of students for whom

education and learning are probably higher than the responses would indicate. One should probably include all those students who mentioned that they liked hands-on activities. Presumably, when these students are presented with such activities, they respond and enjoy the educational experience.

Another of the better students, Suzie, and a few others singled out specific classes as either enjoyable or not. "I like school but I like tennis better. I don't like P.E. and I like everything else. Study skills was boring. Thank God for science!" It is interesting that even for this excellent student a sporting activity provided more enjoyment than did school. Student #4.8 also mentioned specific classes. "I don't like math. I don't like all of the homework. I like Helth. I like Art."

One student, Jean, noted the relationship between learning and being with her friends. To her school provided both. "I like school because where else would you find education and to be with your friends." Another student "Lil' Sweetstuff", provided a similar response. "I like school cause I get to socialize with my friends and learn new things."

Analysis of Survey #2. Csikszentmihalyi (1990a) argued that enjoyable experiences provide a balance between challenge and skill. If the challenge is minimal or one's skill level far exceeds the challenge, boredom results. If the challenge is too great for one's skills, the individual experiences anxiety. For an experience to be enjoyable, for an experience to be one that the individual will seek to repeat again and again, the experience must require skills that one possesses or can be attained during the experience, and the challenge must be within the reach of these skills. The challenge must be great enough to stretch one's abilities and increase one's skill level during the course of the activity.

In order to interpret student responses to survey #2, I arranged them in three categories according to Csikszentmihalyi's (1990a) concept of the "flow channel",

reflecting his contention that flow is a delicate balance between skill level and challenge (Table 4).

Table 4
Responses to Survey #2, Interpreted in Terms of Flow Theory

Category	Comment	N	Total
Boredom	Subjects or lessons boring	11	
	Teachers boring	2	
	Too many videos or movies	1	14
Flow	Relationships, being with friends	13	
	Learning & educational activities	8	
	Sports	2	
	Being challenged	1	
	"I'm a good student."	1	
	Nice teachers	1	
	Unspecified love of school	1	27
Anxiety	Too much classwork or homework	11	
	Lack of freedom, time constraints	10	
	Teachers rude or show favoritism	5	
	Dislike of specific classes	4	
	Fights, "scary" people & misbehaving cohorts	3	
	Unspecified hatred or dislike of school	3	
	Getting in trouble	2	
	School too hard or "I'm not good at it."	2	
	Tests	2	
	Stressful	1	43

Placed on a graph of challenges versus skills, 43 students (51%) fell in the anxiety field, 14 (17%) in the boredom field, and 27 (32%) in the "flow channel" (figure 3). Thus, a little over two-thirds of the respondents (68%) were meeting challenges too great for their skills or were faced by challenges that did not require the level of skills they had already attained. Less than one-third of the respondents described experiences that seemed to reflect flow. This probably constitutes a maximum for the class.

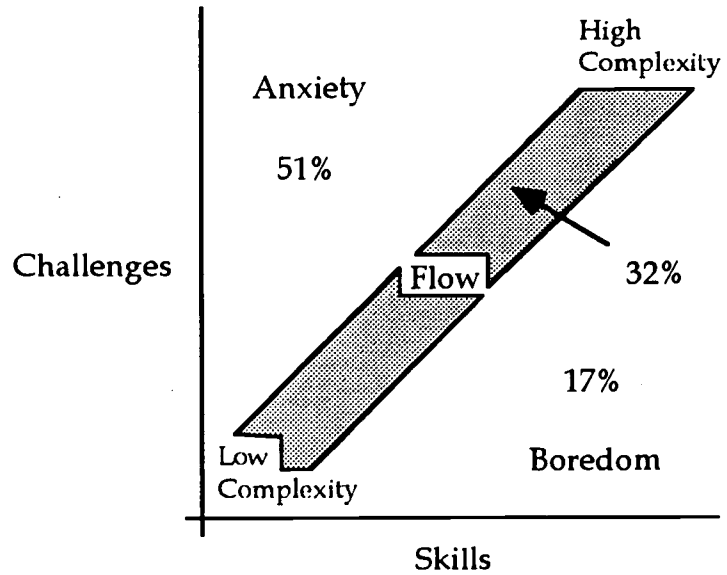

Figure 3. Distribution of students relative to "anxiety", "flow", and "boredom" fields on a graph of "challenges" versus "skill". This is a purely schematic depiction of student flow states.

Survey #3. Boyer (1996) conducted this survey to evaluate the course at mid-semester, with the intend of using the results to modify instruction during the second half of the semester. The survey was conducted on Friday, 29 March 1996, the last day of the third quarter. A total of 68 students, of approximately 104 in the four classes, responded.

Students were asked to evaluate three aspects of the course over the previous nine weeks: (a) teacher behavior and performance, (b) student behavior and performance, and (c) the content and presentation of the subject matter.

As the following table indicates, the responses were overwhelmingly negative, 129 negative responses versus 14 positive comments. Not all students responded to all three parts of the survey. Some responses were not used because the comments were not specific. For example, I did not use comments such as "Students did well." In order to be counted, the comment had to provide useful information: "The teacher was rude to me and accused me of doing things I didn't do."

Over half the negative responses dealt with student or teacher behavior and performance and were relatively equally divided between teacher and student (Table 5).

Table 5
Summary of Responses by Category

Category	Positive	Negative
Teachers	9	38
Students	---	31
Subject	5	60
Total	14	129

A few of the responses were relatively detailed and addressed all aspects of the class: student behavior and performance, teacher performance and behavior, and the content and conduct of the course. An example is the following response.

> --students - A+ • performance • I think our performance in class is good. • behavior • Our behavior is hyper because of snack break and you guys punish us for it.
> --teacher - D• performance • you guys act boring. • behavior • your behavior is boraing
> --subject - D • matereals • & lessons. Most are really boaring and some are kind of okay. We need rewards for being good. that is why science is boaring.
> Over all grade 4 teachers. F

The previous student's comments were especially troubling because in the first survey, conducted on the third day of the new semester, she had expressed the following wish for science class. "I like science so I hope you guys make it fun." Apparently the instruction and the course content had not lived up to her expectations or wishes.

An anonymous student provided another very complete and helpful response.

> -STUDENTS B. - TEACHERS C- always yelling @ the class. talk 24-7 when we try to watch movies.
> - SUBJECT MATERIAL & LESSONS hard to comprehend. some of the words, terms, & names I've never heard and nobody tries to explain. most of the matrial bores me. I would like to do more experiments (like with liquids). I would be more intrested in astrology, the planets, dimetions, the brain, forest, ect. I would like to maybe take a field trip to the woods & learn hands-on about the forest and nature.
> I enjoyed learning more about earthquakes and volcanoes. But we didnt get to much in depth. We only scratch the surface on all the subjects.

Comments about Boyer, the teacher, generally dealt with three categories: fairness with individual students, treatment of the class in general, and the maintenance of discipline. One student noted, "You should have a D- because you got me confused a lot of times." Another thought that Boyer's performance and behavior were good but that he needed "to be a little strikter so kids dont act up."

Yet another was critical of Boyer's conduct of the class (grade F) and the behavior of her fellow students grade (D-).

> Teacher subject performance. Grade F. Because I can't sit still with out doing something fun and teaching is not very fun you need more things than just watch the movies or looking at the over head and lose the test and notes if you make fun we wouldn't for get and if we wer to keep to notes make them shorter (Play more games behavior A-). Student performance A+ behavior D- cause don't like to like to listen. I was at least heartened that I had received an A- for behavior.

Another student indicated that the entire class was unfairly punished when only a "few" students were to blame for disruptive behavior. "Sometimes the teachers punish the whole class for something maybe two people did, and when you try to tell them, they say it's too hard to pick the problem people out."

A female student thought that the student teacher (Boyer) was unfair to her and a number of her friends.

> Dear Mr. Boyer, I would like to do more hands on activitys. I don't like the levers, pulleys, inclined plane activitys. I would also like to do more experiments like volcanic eruptions. Another thing is that I don't like the way you treat people. Like when _____ [her partner] was asking ___ for a piece of paper and you told her to turn around and I thought that was wrong. The behaviors really sucks and so is your performance and our performance and our behavior is really sucks to. Sincerely, _____ _____.

Her partner concurred.

> Dear Mr. Boyer, I don't like the way you get on people for asking for paper or asking for a pen or pencil. For example: Today I turned around to ask a friend for paper for an assignment and you said, "_____, turn around right now!" I got mad. I mean gosh I was just trying to get some paper. I mean chill out. I also think you pick on people to much. Just like [Samantha] said. When I ask for my grade you tell me that you'll give it to me later. You never do! Sincerely, _____.

In the latter part of her response, this student was probably referring to a comment that her friend Samantha had made. After the students had finished writing, Boyer

conducted a classroom discussion so that they could openly air their grievances and comments. This student may have finished her response after Samantha had responded orally. The following were Samantha's written comments which parallel the above student's response.

> C+ This class is "OK" I think that we do to much writing & my opinion is you pick on me. A lot of other people talk & then you tell me to be quiet. I also like doing things with my hands & I would like to mix things (liquid) & disect things I would give you a better grade if you did alittle better job of not so many notes & dont Pick on me so much.

Early in the semester, Boyer constantly had trouble with Samantha and her partner, Lania. They were always doing each other's hair and chatting away with each other and nearby classmates.

> B- I don't enjoy this class most of the time because you don't make it fun like Mr. _____. I don't like earth science stuff, but I do like biology. I also don't like it because you always talk to me & I don't do anything.

Another girl in the class also did not like the "earth science stuff". "Subject material: B- Easy work but I don't like earthquakes."

She gave poorer grades for student and teacher performance.

> Students: D- People always getting in trouble never paying any attention to the teacher. Teachers C+ they don't help the kids that have trouble should make more fun things to do.

This is in contrast to the comments of the following student, who thought that the student teacher had made a concerted effort to help.

> I think that your actions were well done and you mad it fun. When someone needed help, you or Mr. _____ always came to help. You always explained things over and over if it was needed. I think you did a very good job of teaching.

Students frequently criticized their fellow classmates or the behavior of the class in general. One commented that student "preformance is well not very good, because the students don't want to do the work. [Their] behavore is not good because people are disruptive in class and too loude for other kids that want to learn."

One perceptive student made a link between student behavior and the conduct of the class, a relationship with which I had become painfully aware. She correlated "off-task" behavior with boredom.

> Teacher. To many test, and notes, you need to tell more about extra credit. You talk to much, we don't do alot of hands on activity's. This class is boring. Students We would act better if it wasn't so boring. And have so many test and notes because we don't like writting very much.

Several students were troubled by the noise in the classroom, but were equally upset that I occasionally lost my temper and "yelled" at students out of frustration. The following student's evaluation was typical.

> B+ I think this class is kind of nosie at times and nosiy but still good!
> D- teacher no to yell [at us?] un approprite too mean but still kind of cool and sometime as it is boring in here.
> F- I think there [lessons] kind of fund but borring most of the time.

On the other hand, two students, one female and one male indicated that teachers should yell more often. "The students need to be diceplined more. . . . The students should respect the teachers. You should show them that you are in control. Mr. Boyer should yell at us when were too noisy like Mr. ____ does." (Suzie). "We talk together. You should yell more." (Dan). The girl was one of the top three students in seventh grade science. The boy was a solid student but was easily drawn off task and did not attain his true potential.

Such statements sadly reflect that students have come to expect "yelling" as a means to establish and maintain order. This is a negative message that students are overtly or covertly receiving from teachers.

One student's ambivalent comments indicates the fine line between being too strict and not being strict enough. "We are too noisy. The behavior is lousy. We're to noisy we can't even learn. The teacher should be more strict to disipline us. But not to strict."

Figure 4 summarizes the negative comments relating to content and style.

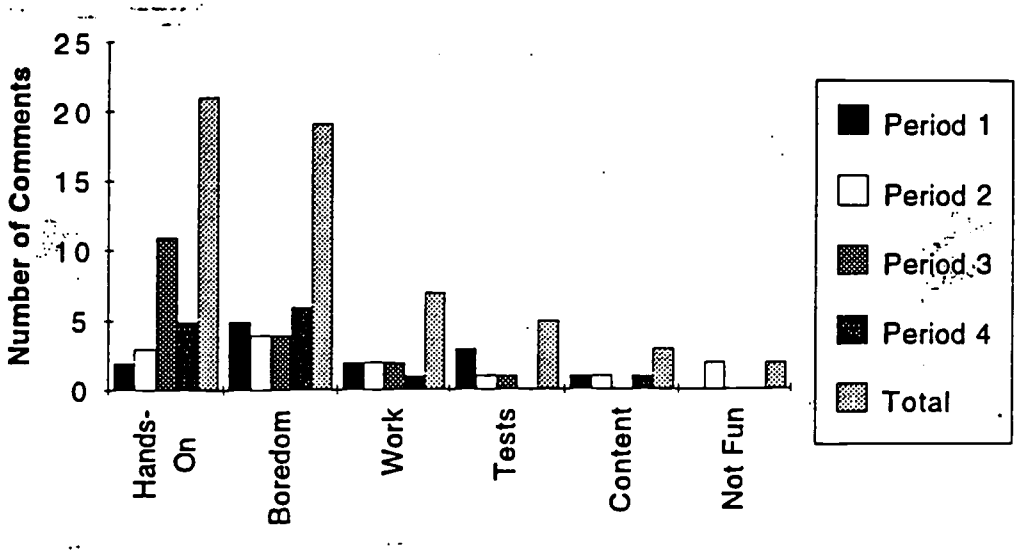

Figure 4. Negative comments about content and style, broken down by class period and criticism.

Regarding course content and the conduct of the class, many students voiced criticisms similar to the following. "I think we need to have more hands on act. but they need to be messeyer, so your hands get goowie or we need to disect stuff, more than just a lambes eye." The paucity of hands-on activities, the most frequently mentioned criticism, was implicated in boredom, the second most frequent complaint.

> This is a boring class but if we get to mix things it would probably be funner and I would like to disect more things. I think that if this class is funner than the kids would be more respectful. I think the teacher should not be so boring make jokes about the stuff we are talking about. Work on something more interesting.

Some thought there was too much homework or that the assignments were too difficult or inappropriate. "There should be no workpages. The questions ask about one sentence in the whole chapter. So if we don't know the answer to a question we have to read the whole chapter over again."

Many students' comments indicated that they had no control over what happened in the classroom.

> Teachers - taks way to much about the same things over and over annoying when takes are pens and writes on are paper when we get it. Yells at the class 24-7 about stuff. Talks about stuff we don't care about it. grade D-
>
> Materials - I think that the lessons are dumb. I think that we should do stuff that we want to do ! /not what you want to do\

A few responses were quite detailed, and it was evident that the students had taken the survey quite seriously. The following response succinctly covered student performance and behavior, discipline, Boyer's general conduct as a teacher, the "slow and boring" nature of some of the lessons, and the need for student involvement.

> Well I thought that some of the students behavior was fair. I thought the disapline that was given by you was fair.
>
> I think that your actions were well done and you mad it fun. When someone needed help, you or Mr. _____ always came to help. You always explained things over and over if it was needed. I think you did a very good job of teaching.
>
> Some of the lessons that were given were kind of slow and boring. The materials that were given out, weren't always in the best condition, but they were alright for use..
>
> I would sugest that choosing a lesson that everybody would participate in and have fun would be great.

One student's response linked boredom to the fact that I didn't give the students enough credit for their intelligence.

> Students C- performance D- behavior. Teacher C Performance B+ behavior. D+ subject material & lessons lessons are repetetiva & boring. Class is relatively uneventful. Need to treat us as if we were smart as we are. More interesting curriculum also necessary for effective tutoring. However, the current curriculum is very comprehensive.

This comment came from a student who is achiever and whose performance and classroom demeanor were quite good. For sometime Boyer believed that his facial expressions indicated disgruntlement, but he was never sure what was troubling him.

Their were a number of student responses that closely reflected Boyer's feelings about the students, his performance, and the content of the class. The most valued response came from Di, a cool, calm kid, whose opinions provided a good gauge of the class temperament.

> -Students - this is a great class. Only thing is that we're too noisy. 90% of us are alway noisy. 5% of us are trying to listen: 5% of us are just, well, sitting there. ÷ B-
> --teacher - He/they tries hard. Nobody really cares/notices. but he/they try hard to teach us. ÷ A
> --subject material & lessons - Everyone thinks they're boring. They need some spicing up instead of just droning on, and on, and on . . . etc. I like the expirements (when you work with your hands) though. B-

Interpretation of Survey Responses

Based on the student responses, we concluded that the students rarely attained flow in the classroom. They routinely felt a lack of control over proceedings in school. They complained of not being able to talk and visit with friends and that breaks and lunch were too short. They complained about lack of freedom of movement in the classroom. Their comments indicated that they had no control over what they studied or how they went about their studies. The classes and activities most often mentioned as providing enjoyment involved group work and projects that lasted over at least several days and resulted in a major finished product. There seemed to be insufficient hands-on work to satisfy most students, although both Boyer and the mentor teacher felt that they were stressing hands-on activities. Students complained of too much writing and note taking. Several commented that the teachers spent too much time talking.

Students became deep and effortlessly involved on a number of occasions when they did have control over the conduct of the activities. These were usually hands-on experiments.

Of course when one is deep and effortlessly involved, one will also likely be unaware of any distractions. Several students complained abut the behavior of their peers and their teachers. The behavior of both seemed to act as distractions.

Students seemed to be quite aware of time, yet another indicator that the students often had trouble attaining flow. Of the negative responses in survey #2, 12% related to time. However, more broadly interpreted, the number may have been as high as 18%.

Concern for self, as interpreted from various affective comments relating to stress or frightening situations amounted to 14% of negative responses. We suspect the number would be higher, if we had specifically queried students on this point.

From both survey comments and informal comments during and after classes, "the desire to repeat the activity" was definitely lacking. Rare is the seventh grader that would

say that he or she would like to repeat the experiences of seventh grade science! From the symptoms exhibited by students in the classroom Boyer (1996) interpreted that flow was for the most part absent and that it rarely entered into the experiences of these students in any of their other classes. What blocked flow for these students?

Blockages to flow. Many of the prerequisites for flow were lacking in the students' classroom experiences. Students complained on surveys and during activities about insufficient time to conduct activities. They were frequently confused and flustered that they did not have the time to learn to do the activities. They were confused about what they were supposed to do, how they were to do it, and what they were to learn from the experience.

Students seemed to swing madly between boredom and anxiety. If the task was too difficult they experienced anxiety, but only up to a point. Then they tuned out and slumped into boredom. At the other extreme, students that started out bored would let their minds wander to other stressful aspects of their lives and thus anxiety of an unrelated nature would enter the classroom.

In many instances perhaps goals were not clear. Each unit and lesson should have contained a more explicit statement of desired outcomes.

Intermediate tasks often enabled students to have flow, but this did not happen frequently enough. Once again, the problem was usually time. To the students, tasks seemed too great for the time allotted. They had no grasp of intermediate tasks that could be completed in a reasonable period of time. They easily became overwhelmed.

Overall, feedback during classroom experiences was often delayed. Tests and write-ups of activities were not handed back in timely fashion.

The design of the instruction did not provide an adequate sense of control. The curriculum was tightly constrained and students had no control over the design of activities or the types of activities that would be conducted.

The most damaging problem was perhaps the inability to totally remove distractions. The environment was rarely free of distractions so that all students had the ability to concentrate on the task at hand. This was one of the most frequently cited complaints by students, regardless of ability.

Educational Significance

"Flow theory" provides an effective framework for viewing the learning environment and adjusting it to the educational benefit of children. If it is true that our minds have limited capacity (Csikszentmihalyi, 1990a), the teacher should help students learn to discriminate what they will let into consciousness. As Csikszentmihalyi notes, it is "the information [that] we allow into consciousness ... That determines the content and the quality of life" (p. 30). Thus, the teacher must act as "trail-guide" to those new to the concept of optimal experience.

A teacher's primary responsibility is to establish a learning environment conducive to enjoyable self-directed learning. "A teacher who understands the conditions that make people want to be literate--want to read, to write, and do sums--is in a position to turn these activities into flow experiences, and thereby set students on a course of autotelic learning. When the experience becomes intrinsically rewarding, students' motivation is engaged, and they are on their way to a lifetime of self-propelled acquisition of knowledge." (Csikszentmihalyi, 1990b).

If the proper education requires and equates to enjoyable experiences (Dewey, 1938) and the individual student is to play an active role in that education (Duckworth, 1987), "flow" or the having of "optimal experiences" (Csikszentmihalyi, 1990a) provides a natural theme for the foundation of a middle school. Implementing conditions for flow in the middle school classroom lays the foundation upon which other progressive notions, such as multiple intelligences (Gardner, 1983, 1993) and different modes of learning and knowing (Belenky et al., 1986; Samples, 1987) can be built.

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