Designing Optimal Educational Experiences

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Abstract

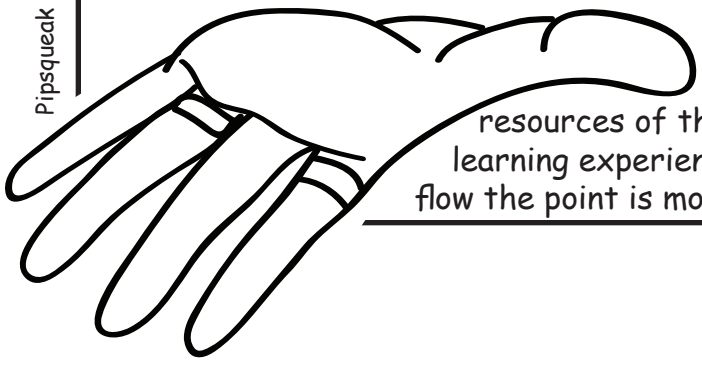
"Flow" is an optimal experience, where a participant is so positively engaged with the activity that he looses all sense of time. Product designers have introduced the concept of "flow" to improve the experience that users have with their products. Can the same concepts used by product designers be applied to the development of instructional materials to improve their effectiveness? This paper discusses these concepts as variables and provides a useful framework to utilize these variables in curriculum design. Sometimes a picture is worth a thousand words. The unusual comic book style used to present this paper is an illustration of the use of media to promote flow in reading complex information. Even serious work can be presented in formats that grab attention and provoke memory formation in its readers.

Introduction

I'm interested in creating educational materials that teachers and students enjoy using. Having spent an unreasonably large portion of my life in school, I can attest that such learning objects are rare. Unfortunately, we all find it easy to recount personal examples of bad educational experiences. What's difficult is figuring out how to develop great ones.

In considering the common elements of positive learning experiences, I started with Vygotsky's parameters for Zone of Proximal Development which, for this purpose, can be reformulated as 1. the possession of the right prerequisite amount of knowledge to find the information both not too boring (too easy) and not too intimidating (too hard) and 2. the right environmental conditions that facilitate and scaffold learning.

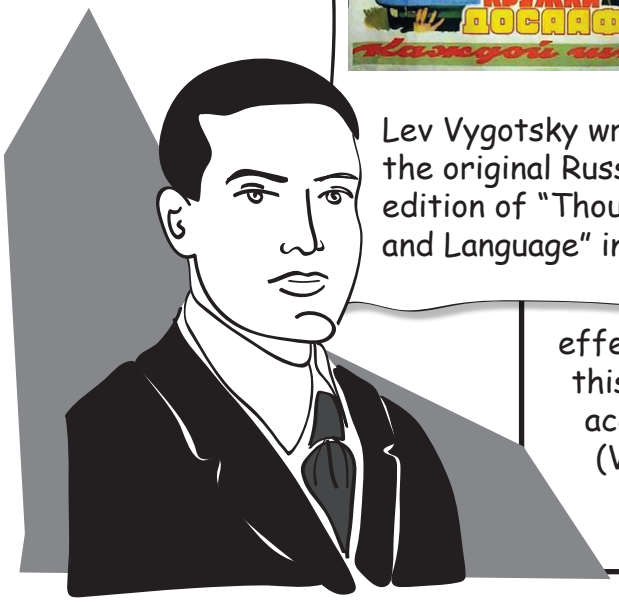
But in this paper I'm proposing three more variables. Two that changes ZPD into an "optimal experience": 3. interest in the subject matter being taught and 4. the ability to spend the necessary time and attention to learn the material. These two variables are designed to evoke "flow" as defined by Mihaly Csikszentmihalyi. Being able to induce flow is a key addition to a learning experience.



And the final, fifth variable is "doability"—the capabilities and resources of the institution which is providing the learning experience. Without the resources to facilitate flow the point is moot,

ZPD

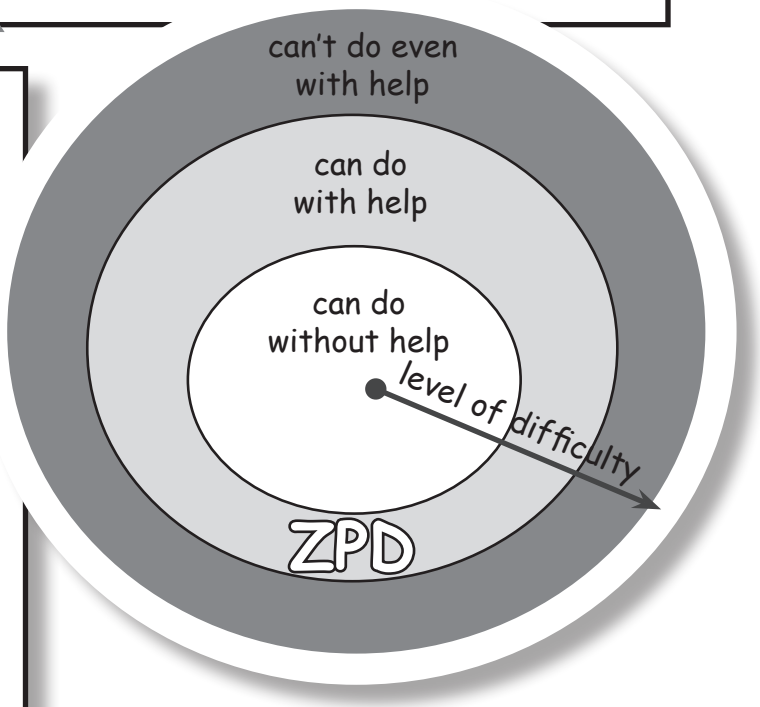
A well-designed curriculum should serve as a bridge between what students already know and what they don't. This bridge exists within the **Zone of Proximal Development** ("ZPD").



Lev Vygotsky wrote the original Russian edition of "Thought and Language" in 1934.

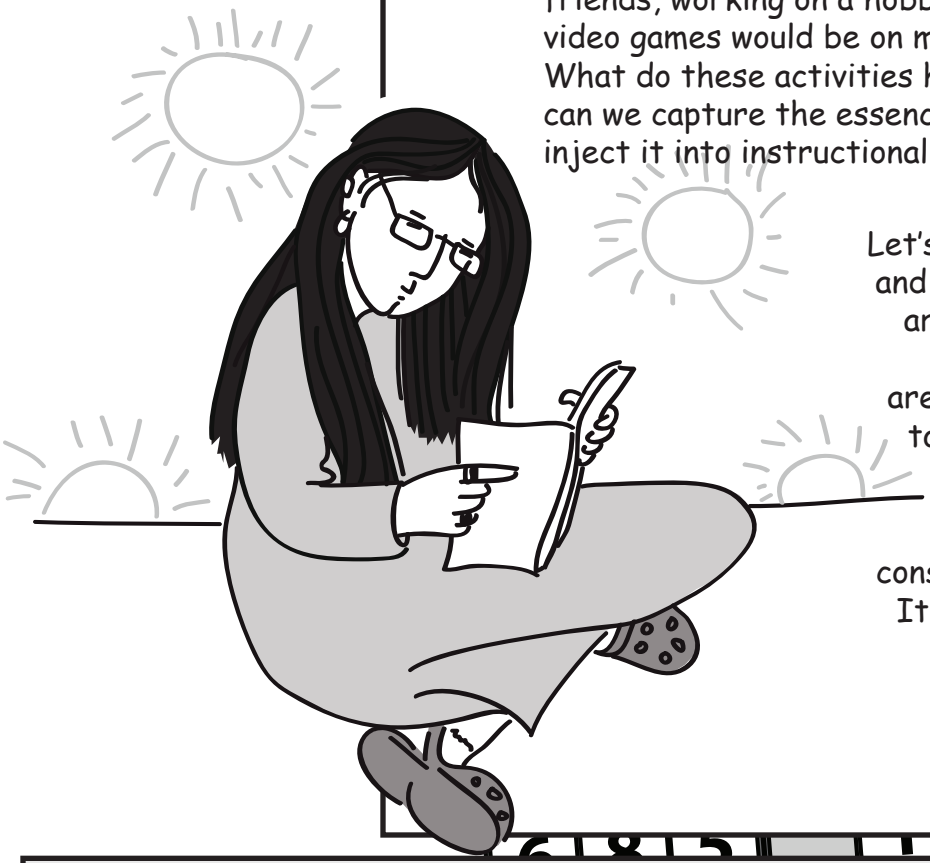
ZPD is a concept introduced by a Russian psychologist, L. S. Vygotsky, in his theories on human knowledge acquisition shortly after the Russian Revolution. ZPD is the zone between what students know how to do on their own and what they can't accomplish even with the help of a great teacher. Stated another way, it's what a student can achieve with guided assistance. All effective teaching efforts should be aimed at this zone. Efforts aimed beyond this zone, according to Vygotsky, will be ineffectual (Vygotsky, 1978).

When designing a curriculum, it's critical to understand the audience of students. Students' cognitive, emotional, and physical limitations determine their ZPD. Once we know (or have a good guess) what a student is capable of doing with help, we can then start to develop the supporting structures for a particular task. These support structures are called "scaffolds" and they are a key concept to effective instructional design (Bransford et al., 2000).



Optimal Experience—"Flow"

What does it take to have a good time? Ask a hundred people and get a hundred answers. Favorite activities include reading, talking with friends, working on a hobby project. Playing video games would be on many people's lists. What do these activities have in common? How can we capture the essence of "good time" and inject it into instructional design?



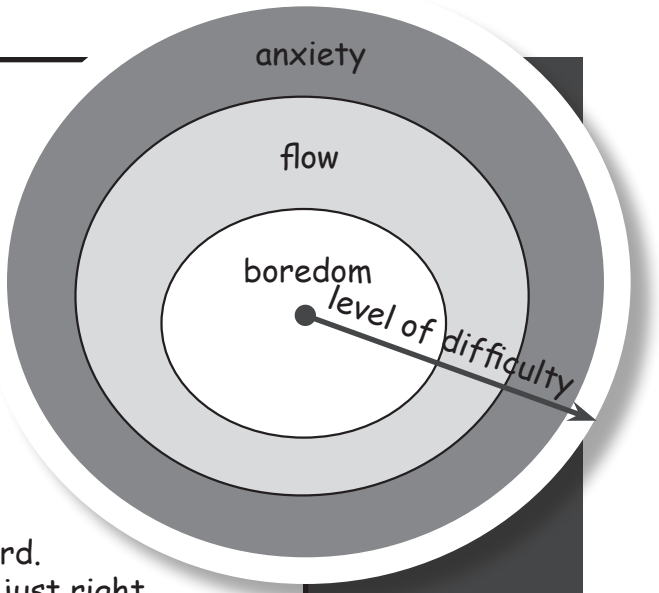
Let's compare video games and reading. In what ways are they the same? One way is that when both are enjoyable, people get totally "into" it and lose track of time.

An engrossing activity consumes **total attention**. It can't be boring or the mind wonders.

But total attention alone is not enough. It also has to be **enjoyable**. Being drilled at the dentist is engrossing but isn't usually associated with having a good time.

I love Sudoku. I've spent hours solving the Sudoku puzzles, happily drinking coffee on a lazy weekend afternoon. But I don't like all of the puzzles. Easy ones are just too easy, there's just no challenge to doing them. The very difficult ones (often labeled "impossible") can be okay, but they take so long—Sudoku puzzles really have to be done in one sitting—that I start to feel guilty for wasting my time when so many other things need to get done. For me, easy puzzles and impossible ones don't qualify as a "good time," but for completely different reasons. The impossible puzzles don't fit the "environmental conditions" I set for playing this game, So **environmental conditions** matter.

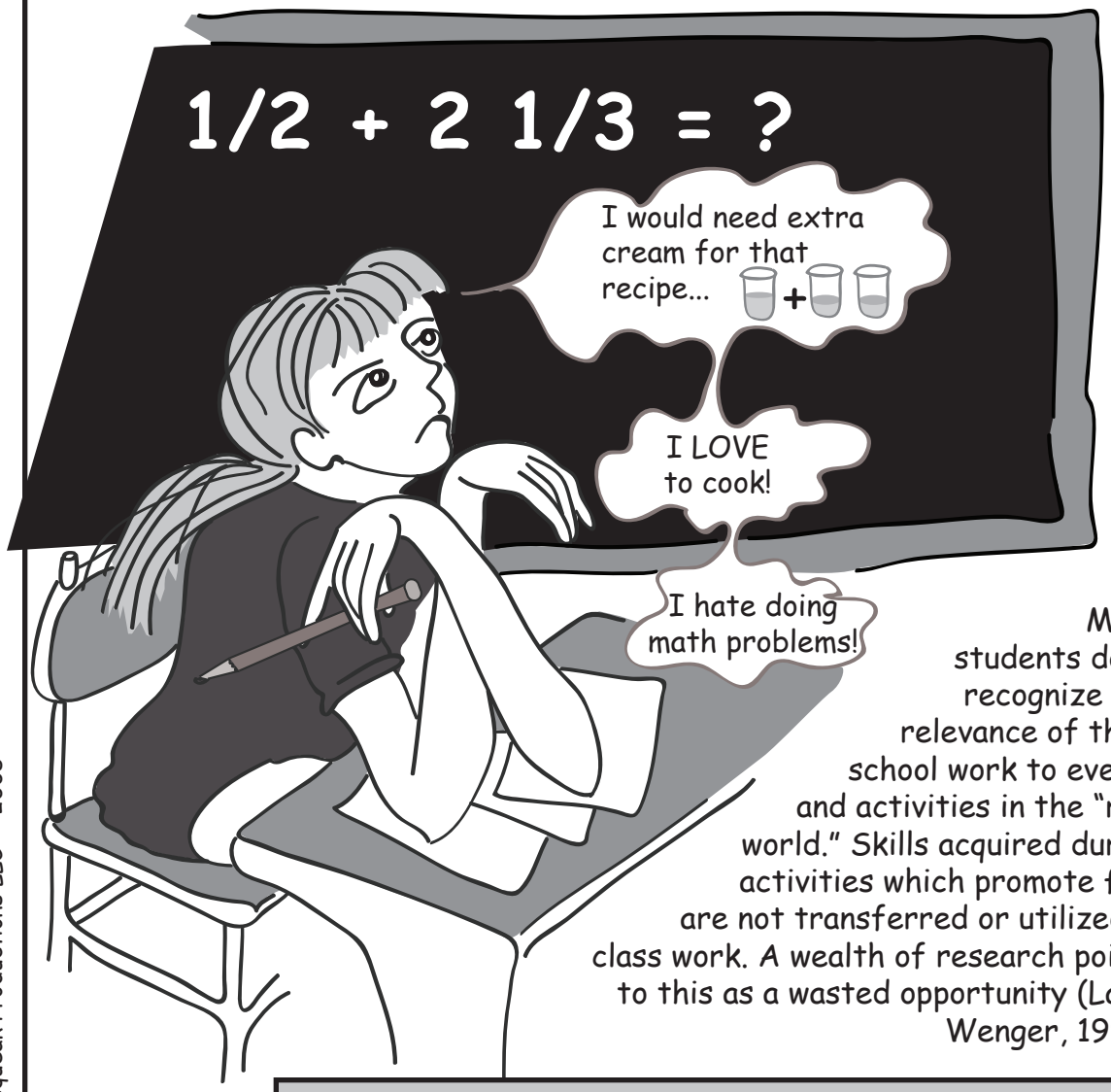
My sons are avid chess players. It's one of their optimal experiences. They are very good at it, too. But they are not interested in playing "newbies"—there's no challenge trouncing someone who can barely play. And while playing highly-rated players is a lot more interesting, if there's no chance of winning the game, then there's little pleasure in playing it. Chess players have to be equally matched to experience the optimal game play.



So the activity can't be too easy or too hard. It has to fit the skill set of the individual just right. It has to be **cognitively exhilarating**. If it holds too little challenge, we get bored, our minds start to wander, and we lose our connection to the experience. If the activity is too difficult, we get stressed out—there's no pathway to success. An optimal experience lives in an **"Intellectual Goldilocks Zone"** (Werby, 2007).

Mihaly Csikszentmihalyi calls the experiences that satisfy the above criteria **"flow"** (Csikszentmihalyi, 1991).

Optimal Experience in the Classroom?

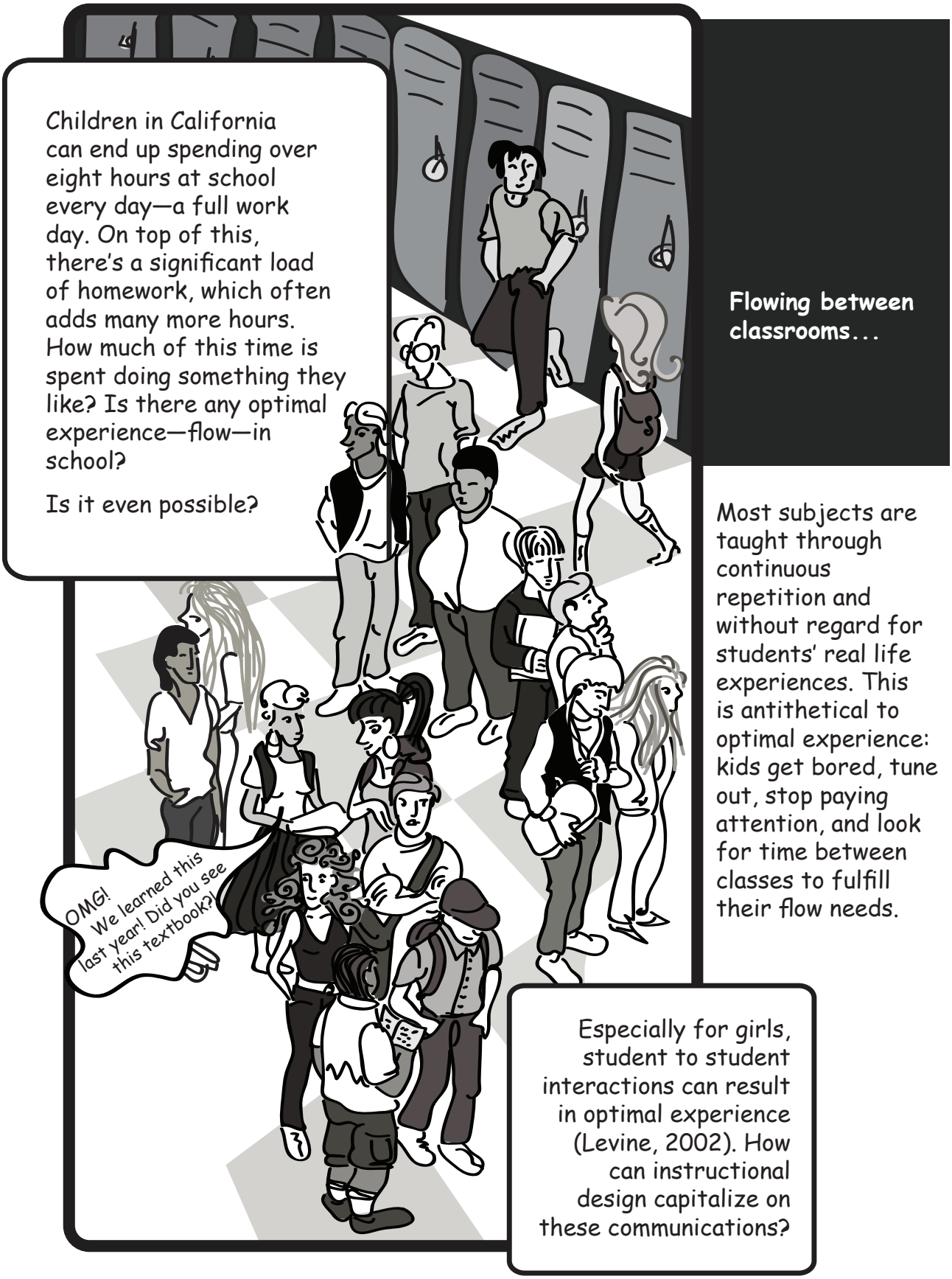


Many students don't recognize the relevance of their school work to events and activities in the "real world." Skills acquired during activities which promote flow are not transferred or utilized in class work. A wealth of research points to this as a wasted opportunity (Lave, Wenger, 1991).

Optimal Experience Variables:

- **Enjoyable**—emotion/feelings
- **Engrossing**—attention
- **Environmentally Appropriate**—situation
- **Cognitively Exhilarating**—background knowledge

Flow is a combination of these four variables.

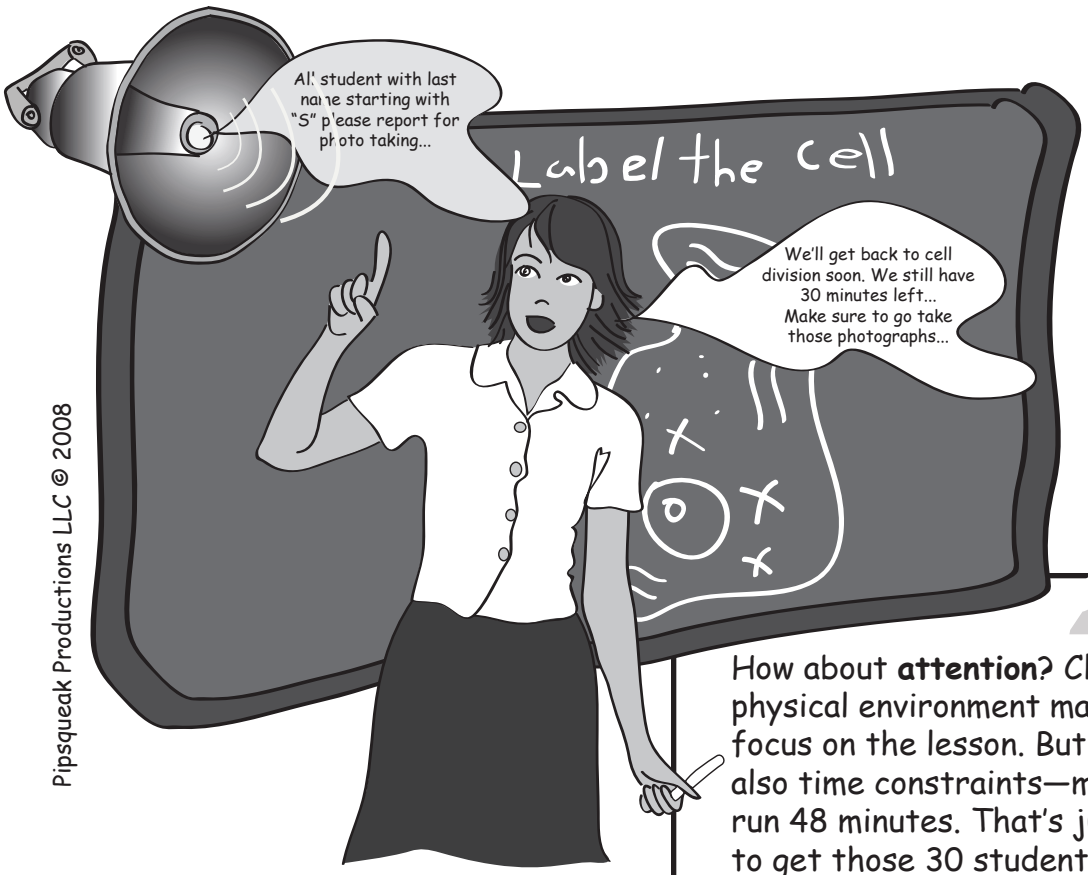


Meanwhile in the classroom....

By definition, to experience flow, a student needs to 1. enjoy the material being taught; 2. be well-matched to the material (i.e. it's not too hard and not too easy); 3. be able to pay attention to the lesson; and 4. be in learning-conducive environment. We can analyze these criteria one at a time.

1

Let's start with the **environment**. With over 30 students per class in most upper grade California classrooms, physical space per student tends to be very limited. Some schools have even banned backpacks in the classroom because they become a hazard in overcrowded conditions. Students can't spread out their work, and thus focus their attention only on those items lying directly on top of their desks. The blackboard is difficult to see from the back of the room. Even a few casual whispers or chair adjustments create a cacophony in a space with so many people. It tends to get very hot, very fast. And these are just the physical parameters. Add constraints such as the difficulty that teachers face answering everyone's questions, and it's clear that the classroom environment doesn't lead to flow.

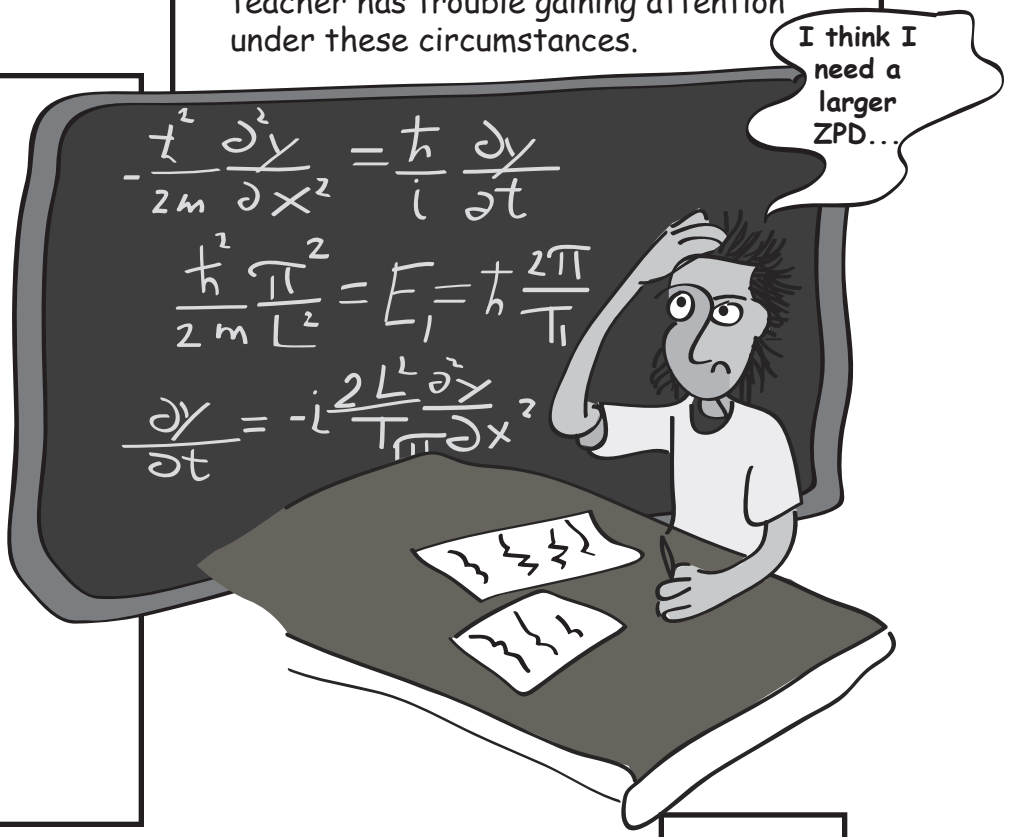


2

How about **attention**? Clearly the physical environment makes it difficult to focus on the lesson. But then there are also time constraints—most classes only run 48 minutes. That's just enough time to get those 30 students nicely situated, unpacked, and collect their homework. And there are continuous interruptions from school-wide loud speakers making important announcements. Even a great teacher has trouble gaining attention under these circumstances.

3

Most California classrooms are integrated, meaning high-achieving students are learning alongside children with autism or other developmental problems. After years of integrated schooling, students don't arrive in a class with the same **background knowledge**—some need a lot of catching up and get totally stressed by work; others are bored. Again, conditions for flow are compromised.



4

And finally, to achieve optimal experience, individuals need to genuinely **enjoy** what they do. Attitude and feeling towards an activity are important. While it's difficult to inspire a love for all subject in all students, it's possible to create opportunities for all students to participate in every subject through activities they truly enjoy and in which they show talent. Music and math, art and literature, acting and history, writing and science—a diversity of learning styles require a diverse curriculum.

5

Zone of Maximum Benefit

It would be great to always be able to understand just what a student needs and to individualize the instructional content to meet those needs. But in practice, it's usually just not feasible. There are budgetary issues, there never is enough time, and it's hard to accommodate everyone all of the time. So curriculum design is all about compromise: what is the best solution within our means and doable within our time frame? How can we try to satisfy the most number of students the maximum number of times?

The **Zone of Maximum Benefit** is a riff on the Zone of Proximal Development. While the design solution must lie within the Zone of Proximal Development, the execution lies within the Zone of Maximum Benefit—do the best with what you got (Werby, 2007). (In the context of teaching this material to fourth graders, I called the Zone of Maximum Benefit "ZOMBie." The kids talked about where their individual **ZOMBies** were.)

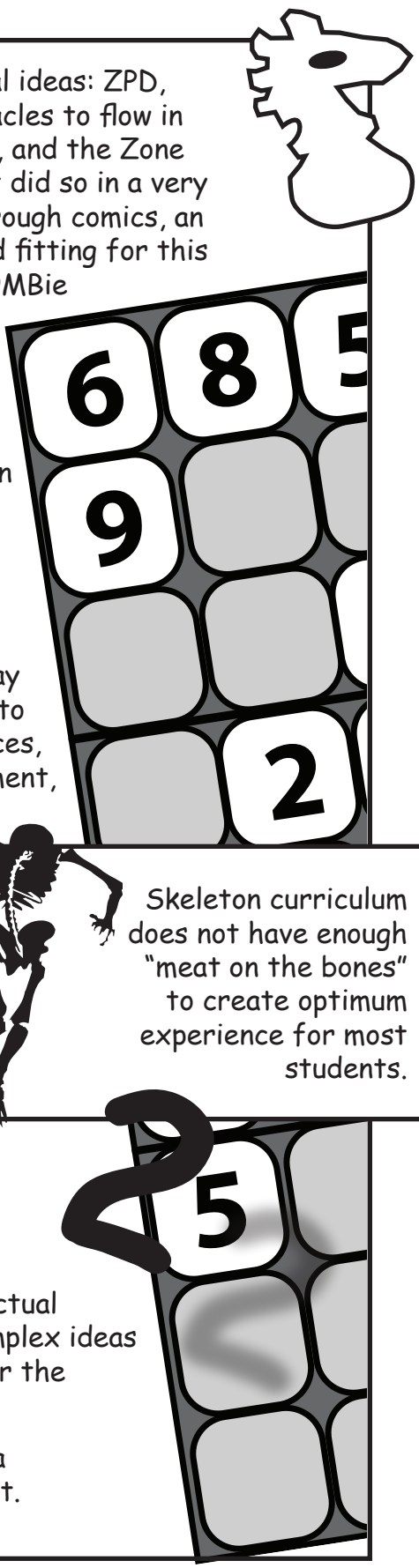
Creating individualized learning materials that tightly fit the cognitive strengths and weaknesses of each student is not possible even with computer-based instruction—there are simply too many variables. However, educational materials can be designed in a wide variety of formats: graphical organizers and text-based outlines; visual illustrations and mathematical formulas; audio books, paperbacks and movies; etc. The greater the variety of materials, the more likely some of them would fall within the preferred cognitive style of a particular student. This encapsulation of content can form the basis of scaffolded design support (Jonassen et al., 2002).

In the real world, ZPD and flow both have to fit within the Zone of Maximum Benefit.

— Conclusion

This paper explored several ideas: ZPD, optimal experience, obstacles to flow in California public schools, and the Zone of Maximum Benefit. It did so in a very unorthodox form—through comics, an approach that seemed fitting for this topic. Introducing ZOMBie into a scholarly comic book was particularly gratifying.

While Vygotsky's ideas about instruction have been widely adopted by curriculum designers, the concept of flow doesn't yet have much traction among the education community. But it's only two variables away from ZPD: flow introduces attention and feelings into the equation. With the addition of available resources, the combination of background knowledge, environment, attention, and feelings becomes a powerful tool for thinking about, evaluating, and developing educational opportunities.



Skeleton curriculum does not have enough "meat on the bones" to create optimum experience for most students.

Some instructional solutions also become obvious when viewed from this perspective. Increasing the length of individual classes and decreasing the number of students in each class increase the possibility of flow. While these solutions are frequently proposed by educational reformers, they are not introduced for these reasons. Enrichment activities embedded directly into the subject matter instruction can also induce flow. And clearly relating information taught in school to students' actual lives and interests not only provides context to complex ideas but also serves to facilitate optimal experiences for the learners.

For many, school and optimal experience seem like a contradiction. But it needn't be so—they can coexist.

Thank you for participating!

Bibliography

Bransford, J. D., et al. (2000). How People Learn: Brain, Mind, Experience, and School. Washington, D.C.: National Academy Press.

Brown, A., Bransford, J., Ferrara, R., Campione, J. (1983). "Learning, Remembering, and Understanding". In J. Flavell & E. Markman (Eds.), *Handbook of Child Psychology* (4th ed.). Cognitive Development (Vol. 3). Section on Metacognition, pages 106-126. New York: Wiley.

Csikszentmihalyi, M. (1991). Flow: The Psychology of Optimal Experience. Harper Perennial; ISBN: 0060920432

Jonassen, D. H., Howland, J., Moor, J., Marra, R. M., (2002). Learning to Solve Problems with Technology: A Constructivist Perspective (2nd Edition). Prentice Hall; ISBN: 0130484032

Lave, J., Wenger, E. (1991). Situated Learning: Legitimate Peripheral Participation. Cambridge: Cambridge University Press.

Levine, M. (2004). The Myth of Laziness. New York, New York: Simon & Schuster.

Levine, M. (2002). A Mind at a Time. New York, New York: Simon & Schuster.

Papert, S. (1980). Mindstorms: Children, Computers, and Powerful Ideas. USA: Basic Books, Inc.

Vygotsky, L. S., (1978). Mind in Society, The Development of Higher Psychological Processes. Cambridge, Massachusetts: Harvard University Press.

Werby, O. (2007). Interfaces.com: Cognitive Tools for Product Designers. California: CreateSpace; ISBN-10: 1438218036

Woolfolk, A. E. (1998). Educational Psychology, Seventh Edition. Allyn & Bacon, Needham Heights, MA.