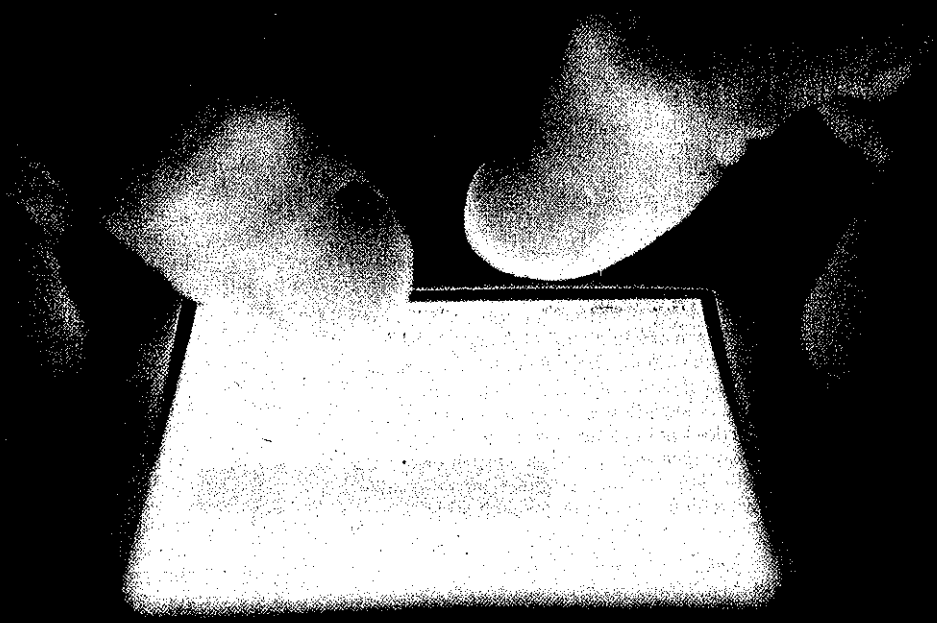
Technology



Today's high school students are the first generation that won't remember life without smartphones, social media, texting—all the things that let us live our lives more alone and more together than humans ever have before.

What's that like for them?

By Jacqueline Detwiler
Photographs by Christaan Felber

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and the American Teenager

Brianna McMonagle, 15, a sophomore at Lawrence Central High School in Indianapolis, photographed on September 15, 2015.

Down a locker-lined hallway at Lawrence Central High School in Indianapolis, Zac Felli, a junior, walks to his first class of the day. He wears tortoiseshell glasses and is built like he could hit a ball hard. He has enviable skin for a teenager, smooth as a suede jacket. Over one shoulder he carries a slim forest-green and tan messenger bag that would have been social suicide in 1997. But 1997 was the year Zac was born, so he wouldn't know anything about that.

A squat, taupe monolith flanked by parking lots, Lawrence Central smells like old brick and floor polish and grass. Its gleaming floors squeak if you move your foot a certain way. The school has existed on precisely this spot of land since 1963: maroon block letters over the door, tang of chlorine from the indoor pool. None of that has changed. Here's what has: After Zac turns the doorknob of Room 113 and takes his seat in Japanese III, he reaches into his shoulder bag, pushes aside his black iPhone 5S and Nintendo 3DS XL, and pulls out his Microsoft Surface Pro 3 tablet with purple detachable keyboard, which he props up on his desk using its kickstand. By touching a white and purple icon on his screen, he opens Microsoft OneNote, a program in which each of his classes is separated into digital journals and then into digital color-coded tabs for greater specificity. And then, without a piece of paper in sight and before an adult has said a word, he begins to learn.

Zac probably started developing memories around 1999, the year Napster upended the music industry by turning songs into sharable files that nobody owned. Or maybe in 2000, the year Google became *Google*. Regardless, he is part of the first generation of human beings who never really lived before the whole world was connected by pocket-sized electronic devices. These kids might never read a map or stop at a gas station to ask directions, nor have they ever seen their parents do so. They will never need to remember anyone's phone number. Their late-night dorm-room arguments over whether Peyton or Eli Manning won more Super Bowl MVPs will never go unsettled for more than a few seconds. They may never have to buy a flashlight. Zac is one of the first teenagers in the history of teenagers whose adult personality will be shaped by which apps he uses, how frequently he texts, and whether he's on Facebook or Instagram or Twitter or Snapchat. Or whatever comes after Snapchat. Clicking like, clicking download, clicking buy, clicking send—each is an infinitesimal decision in the course of the modern American teenager's life. They do this, collectively, millions of times a minute. But together these tiny decisions make up an alarming percentage of their lives. This generation is the first for whom the freedom to express every impulse to the entire world is as easy as it used to be to open your mouth and talk to a friend.

How does all that change the monotony and joy and pain and wonder and turmoil that is the average teenager's life? What is it like?

Like many of the other 2,350 students at Lawrence Central, Zac knows computers better than even last year's graduating class did. The students here use them constantly—up to two and a half hours a day, according to Lawrence Central's principal, Rocco Valadez. This year is the first that Lawrence Central is one-to-one, which in educational speak means that every student on campus has been provided with a leased Chromebook laptop computer. Valadez considers Zac one of his beta testers, one of ten or so students the administration turns to for reports and opinions on how the technology is working. Zac, incidentally, asked if he could use his own Surface instead of a Chromebook. Because Zac is a high-level user, Valadez obliged. ("I'm a Surface guy," Zac says.)

You hear two opinions from experts on the topic of what happens when kids are perpetually exposed to technology. One: Constant multitasking makes teens work harder, reduces their focus, and screws up their sleep. Two: Using technology as a youth helps students adapt to a changing world in a way that will benefit them when they eventually have to live and work in it. Either of these might be true. More likely, they both are. But it is certainly the case that these kids are different—fundamentally and permanently different—from previous generations in ways that are sometimes surreal, as if you'd walked into a room where everyone is eating with his feet.

An example: It's the penultimate week of classes at Lawrence Central, and the pressure has been released from campus like a football gone flat. The instructor of Japanese III, at the moment ensconced behind a computer monitor that is reflected in his glasses, switches on the announcements. The

(1) The college classroom in 2015. This one is at Indiana University. (2) Brianna McMonagle is allowed to use Instagram but not Snapchat. (3) As one of Lawrence Central High's "high-level users," junior Zac Felli, in the blue shirt, is permitted by the administration to use a Microsoft Surface instead of the Chromebooks most students use. (4) Anthony Thomas helping another student log in to his computer in study hall. (5) Leah Arenz, on the right, looks at One Direction photos on Tumblr.

American tradition in this situation—end of school, little work to do, teacher preoccupied—is that the students would be passing notes, flirting, gossiping, roughhousing. Needing to be *shushed*. Instead, a boy to Zac's left watches anime. A girl in the front row clicks on YouTube. Zac is clearing space on his computer's hard drive, using a program called WinDirStat that looks like a boring version of Candy Crush—deftly, quietly, he moves small colored squares around to clean up the drive. Green, red, blue, purple. (When he types, he types evenly—none of that hinky freeze-pause-backspace thing that every adult with a hint of self-consciousness does when typing in front of anyone else.) Above a ziggurat of loaner Chromebooks at the front of the classroom hangs what's called a Promethean board, a panel that looks like a digital tablet the size of a Shetland pony. On the Promethean board, the day's announcements play, including a news segment on a London School of Economics study. The anchor begins: "Test scores increase by more than 6 percent at schools that ban smartphones . . ." At this the students in Japanese III—absorbed in private computational fiddling, phones out on their desks like pencil cases—let forth a chorus of snorts.

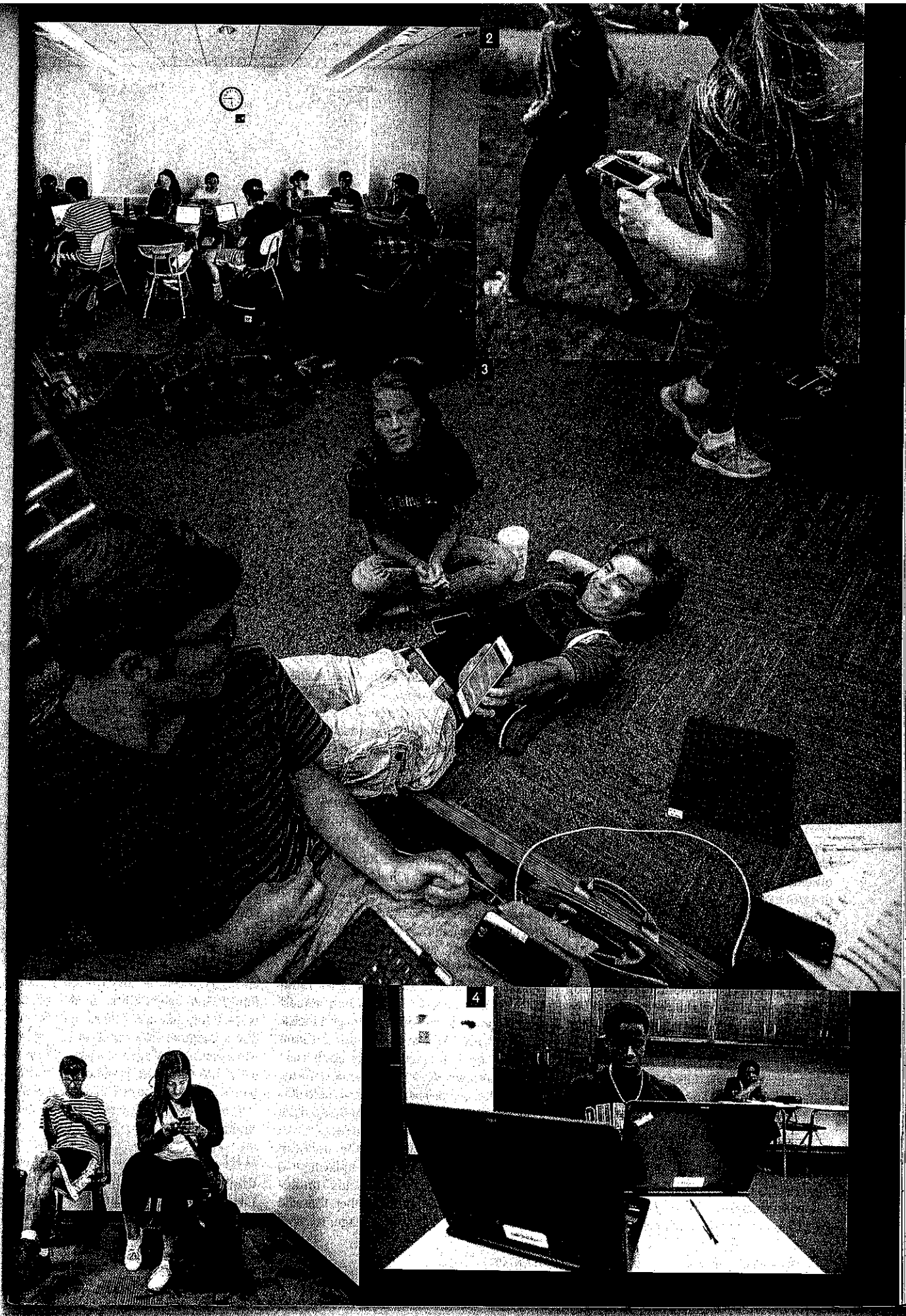
Otherwise, Room 113 is eerily quiet.

LEAH

"The primary motive that teenagers have when they're screwing around online is to connect with somebody else," says Larry Rosen, former psychology chair at California State University, Dominguez Hills, and author of *Rewired*, a book about how technology has changed the lives of the next generation. Lawrence Central senior Leah Arenz does this every day. Also every night. Sometimes even when she ought to be sleeping.

Leah, hair slicked back under a headband, is editor in chief of the school newspaper, often staying in the journalism classroom until midnight to close an issue. She's eighth in her class. When she speaks to you, she makes quick eye contact, and then just as quickly breaks it. Unless you ask her about the band One Direction. Then she becomes someone different altogether.

Leah has a secret Tumblr page she posts to twenty-five to fifty times a day. It's how she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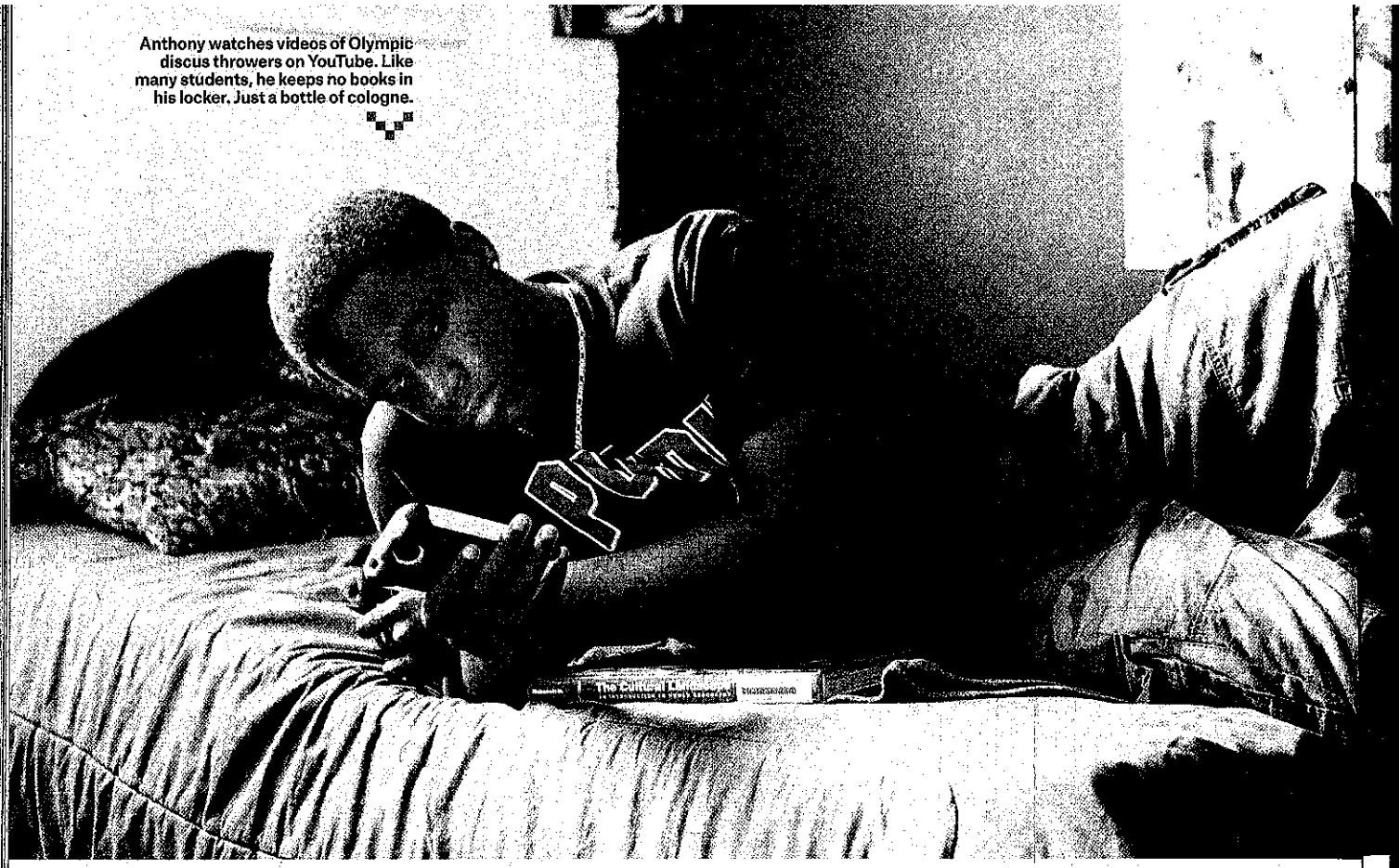


Anthony watches videos of Olympic discus throwers on YouTube. Like many students, he keeps no books in his locker. Just a bottle of cologne.

interacts with what she calls the Fandom, some 25 million acolytes of One Direction who repost, rehash, and relive the band's activities like a swarm of unpaid TMZ employees. Her friends at school do not know the address of her page—they don't even know about this other life at all. "I don't think they would understand or appreciate it the way people in the Fandom do," she says.

When Leah talks about the Fandom, she engages like a drivetrain, leans forward—almost out of her chair—and speaks so quickly you'd swear she was on some new drug. She cracks jokes. Her eyes meet yours. When she blogs, at her dual-screen laptop-monitor setup under a green-shuttered window, she holds her face inches away from her monitor, tabbing between Web pages so quickly she must be selecting photos using only some primordial subconscious boy sense. You get the idea, talking to her, that her Tumblr is more than a hobby. More like an Internet breathing tube. A silicon lung. "I'm weird," she says. "I like 1D. But there are millions of people online who like 1D like me."

For someone like Leah, who built her first website at fifteen and seems uninterested in climbing the capricious social hierarchy that exists in every high school, the community of the One Direction Fandom offers an entirely alternate social structure. It is a universe in which her skills at iMovie, GIF creation, and news collection, paired with the scope and anonymity inherent to the Web, render her an authority on teenage problems both minor and major. "A girl recently contacted me and said that her friend was dealing with social anxiety. She didn't know how to talk to her about it. Later tonight I'm going to think out a carefully worded answer," Leah says.

In this universe, she has great power. Having dinner with her father in an Applebee's near her home, Leah describes how, a few weeks ago, the Fandom was infuriated when one of its favorite One Direction songs, "No Control," had not been chosen as a single by the record label. The Fandom loved the song and was frustrated they weren't being heard, a familiar refrain among teenagers. And so Leah, along with thousands of other Directioners, as they're called, campaigned radio stations to demand airplay. Leah herself tweeted and blogged and reblogged incessantly, staying up at her computer until the stars emerged and receded over her home's suburban lawn. At 2 a.m., she and many, many others favorited tweets to a radio station in New Zealand until finally it played the forgotten song eleven times in a row.

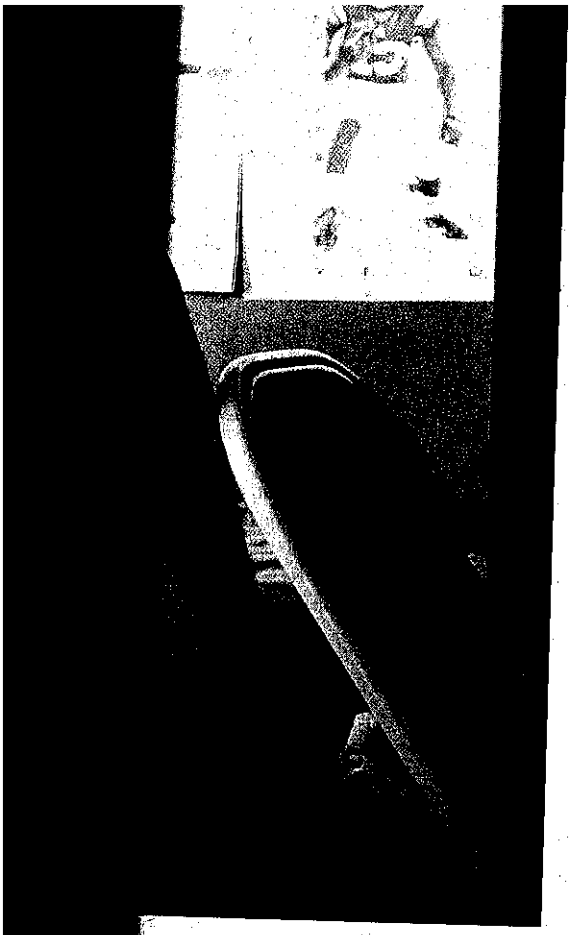
By the time the band began the American leg of its tour, One Direction was playing "No Control" at every show, and Louis Tomlinson, Leah's favorite band member, thanked the teens for their input onstage. It's as if Beatlemania junkies in 1966 had had the ability to demand "Rain" be given as much radio time as "Paperback Writer," and John Lennon thought to tell everyone what a good idea that was. The fan–celebrity relationship has been so radically transformed that even sending reams of obsessive fan mail seems impersonal. Leah's mom, in fact, was one of the original devotees of *X-Files* fan fiction in the 1990s, but she never had the opportunity to achieve the kind of connection her daughter can. As David Weinberger, senior researcher at the Berkman Center for Internet & Society at Harvard University, explains, "You're not simply a consumer anymore. By connecting with other people, you become a participant in the life of the band."

In the Applebee's, Mark Arenz is shocked enough by Leah's story to take a fatherly feint at her sleep habits. "Is *that* what you were doing that late?" he says, then immediately relents. How much of an argument can a parent level against a teenage girl with a 4.7 GPA whose worst offense is staying up late to crush on a boy she'll never meet?

"Imagine what you guys could do in the Middle East," he says.

THE TEACHERS

English teacher Paige Wyatt is one of Lawrence Central High School's eCoaches, a group of teachers who educate other



But then sometimes they watch movies—*in class.* Sometimes they take selfies—*in the bathroom.* Sometimes a student will send a teacher a rude message on an anonymous Web platform, or post his own phone number and home address on Facebook.

It's now the end of the year, and all the Chromebooks have been collected for the summer. "Our study halls are huge—there are forty to seventy kids and one faculty member," Wyatt says. "Normally they just plug in their headphones and keep themselves busy on their Chromebook, but now that we've collected most of them, we're worried that they'll be off-the-wall crazy without something to keep them busy."

ZAC

With the school year nearly concluded and final concerts wrapped a week ago, there is nothing to do today in band class. The band director barely makes an appearance. Pairs of students flop all over the classroom

IN CLASS, EARBUDS ARE MORE COMMON THAN FULL-SIZED HEADPHONES, BECAUSE YOU CAN LISTEN TO MUSIC AND STILL HEAR THE TEACHER—ONE BUD IN, ONE BUD OUT.

teachers about Chromebooks, passwords, Promethean boards, and wise and unwise uses of YouTube. At twenty-seven, she understands much of what the students do. And when she doesn't, she asks.

Take the rules of Instagram. Wyatt just learned them today in the honors English class she teaches. "I was ribbing on this one boy a little bit. He was on Instagram and I asked him, 'What the heck is Instagram?' He said, 'I was just liking pictures. I can't be a ghost.' I said, 'What do you mean, a ghost?'"

Then the whole class chimed in. They explained the rules to Wyatt: You have to have more followers than people you follow. You have to comment on and like people's stuff. Otherwise you're a ghost. And being a ghost is bad.

A campus firewall called Lightspeed is supposed to block Instagram. But obviously, somehow, the students are using it. Because here's something about high school that will never change: The kids live by their own codes, and if adults make rules, the kids will find ways to break them.

"We talk to the kids about responsible use of technology. We talk about credible sources. We talk about being smart," Wyatt says. "A lot of them seem to know, 'Well, you'd never post *that* online. That's stupid.' But a lot of them also don't know. And a lot of them don't care."

For the most part, kids behave themselves. on the risers, sharing earbuds attached to single phones. One girl, wearing pajamas, has curled up around a music stand like a cocktail shrimp and gone to sleep.

Devoid of a responsible adult, this class period has become one of those interstitial moments in teenage life, a rare, vital time when regulation of the adolescent schedule is up to the teen himself. To emerge whole after teenagerhood, one must craft a (hopefully) charismatic personality out of the preferences and skills discovered during times like these. Playing this guitar. Kicking that soccer ball. Reading a book on the history of Asia during the Tang Dynasty. Eventually, the teen becomes a complete person with well-defined interests who then locates other complete people to keep as friends. This has not changed, only now the potential interests to explore are limitless, and the resulting communities so far-flung and socially disconnected that "friends" are not friends the same way they used to be. A "like" is not really a like. The teens' brains move just as quickly as teenage brains have always moved, constructing real human personalities, managing them, reaching out to meet others who might feel the same way or want the same things. Only, and here's the part that starts to seem very strange—they do all this virtually. Sitting next to friends, staring at screens, waiting for the return on investment. Everyone so together that they're actually all apart.

In the band room, if you're standing at the conductor's podium, Zac is sitting on the left side of the risers, about where you'd usually find a pack of timpanists. He's taking a break, playing a video game he found on the blog of a computer programmer he follows. He discovers a lot of entertainment this way—down in the lightless caves of the Internet known only to young people. He has Facebook, Instagram, and Google accounts and four Tumblr blogs. He follows a goateed YouTube comedian named JonTron who reviews videos and games. And Reddit. "I don't know how much time I've wasted on Reddit," he says.

Behind Zac, on the floor, sits the group that 1997 Zac, if he existed, might have wanted to join. It is mixed—four boys and two girls. The girls are cute and friendly. The boys affect cool nonchalance. They talk about who's got a crush on whom and whether they should all go to a JV basketball game together. One of the girls tries to convince one of the boys to put on some of her makeup.

"Absolutely not," he says.

"It's only going to be us that sees it!"

"You sound like when boys ask for nudes," he says.

"We're not even going to take pictures!"

Zac pays no attention to this, not even when the group names a specific couple that has been "smashing"—2015-speak for having sex—for months. Neither does Zac notice the boys reading rude jokes from a cellphone propped on a music stand. He is deep in an entertainment rabbit hole of his choosing, and he has no need to amend his interests to fit in with the social noise around him.

On the one hand, this is an enviable turn of events for high schoolers. There's no dulling the edges of young personalities in an effort to be popular. "If you have an interest in coral reefs or six-string bass guitars or whatever, you can now find a set of people who are just as interested, and you can explore any topic to whatever depth you want," says Weinberger, the researcher from Harvard. What a great time to be alive!

But the converse is also true. "If I'm talking to a stranger and I mention some smaller, lesser-known video game, or I say, 'Hey, have you heard of this band?' chances are they haven't heard of it," Zac says. "I think the only thing that I can truly maybe relate to someone with is something iconic, like *Finding*

Nemo or something." There are fewer true shared experiences—fewer TV shows that everyone watches, fewer bands that everyone knows. There will be no *I Love the 2010s* version of the VH1 series *I Love the '80s* because there won't be enough nostalgia for communal culture to make such a thing worthwhile. Following this observation to its logical conclusion is fearsome: an entire generation that can go online and find legions of humans (user names, really) with similar interests but that barely knows how to connect to one another in the physical world. Friends, sitting around screens, not talking.

Zac's Surface sits on his knees, his cellphone on his thigh. He has moved on to playing a fighting game—Super Smash Bros.—on his Nintendo 3DS XL, which he holds in front of his face. Three gadgets vie for his attention within his immediate field of vision. A green message, sent through Japanese texting app Line, appears on the Surface Pro. He places the 3DS XL next to his phone while he responds in silence.

Lately, Zac has become concerned about his attention. He's been drifting off in class more than usual, daydreaming, tapping on things. When he brought his worries to his parents, they offered to make him an appointment to get tested for ADHD in the summer, after the school year was over. No point adding stress to finals week, they said.

Next to Zac, Chance Williams, a friend, plays a video game for a minute but then abruptly shoves his computer away and tries to interest Zac in a real-life game involving note cards. Chance is largish, spiky-haired, full of kinetic energy.

"I've got an invite to Emma's graduation party," he says.

Zac doesn't respond.

ANTHONY

Before the other kids file into Mr. Smith's Introduction to Engineering Design class, a science and technology course Lawrence Central offers in conjunction with a nearby technical center, Anthony Thomas is in his seat, looking around. "Some of the kids in this class are bad," he says.

Anthony is such a good kid that everyone at Lawrence Central describes him in exactly that way. "What a good kid," his teachers say. And he *is*. Anthony plays linebacker for the football team, where he displays the loping, easy athleticism of a large cat. He holds the door open for strangers. He has known he wanted to be a mechanical engineer since he was thirteen years old, when, after spending the day fixing things at his grandma and granddad's house, he searched "Hands-on careers" on Google and it sent back "engineering." He is mature, he is focused, and he is sixteen.

It's the last period of the day, and the other students in engineering design tumble into the classroom like a passel of river otters—flopping into chairs, whipping out stickered iPhones, unraveling earbuds. The earbuds are more common than full-sized headphones, Anthony tells me, because you can listen to music and still hear the teacher talk—one bud in, one bud out.

Anthony does not wear earbuds today. Neither does he look at his phone, even though that too is allowed. Today, the class is supposed to turn in a final assignment: Use the design software Autodesk Inventor to outline and laser-cut parts for a cellphone station that can hold at least five unique accessories. Playing with apps while trying to do this would only distract him, Anthony says. It's an obvious point but not one you expect from a high school student in 2015.

Once, Anthony says, he received a message on his phone that he felt he had to answer in class. But then he wandered from the messages app to the Colts football app to Instagram to playing Madden football. In class! When his teacher announced that it was time for the students to start on an assigned project, Anthony had to ask someone next to him what they were supposed to be doing. He was disappointed in himself for losing focus. "I didn't like that," he says.

Anthony now avoids distraction by keeping his iPhone in his bag. He knows that if he clicks its lone, enticing button, he'll slide down the rails to the carnival of games it contains. On his desktop monitor he operates only in Autodesk, not clicking on any of the other myriad sites quietly awaiting his attention below the still face of his design template.

You look at Anthony, and you see the way the system is supposed to work. The way Principal Valadez intends for it to work. And then you look at some of the other kids and you worry. Five of the other nine students are watching YouTube videos of a self-driving Mercedes-Benz. They debate the merits of rappers Gucci Mane and Soulja Boy. One makes a rude comment about a woman in a video on his screen.

At this, Anthony bristles. "Ay, man," he shouts with a disappointed shake of his head that not only actually silences the other kids but draws not a single snarky response. He looks around the classroom: "They don't even work," he whispers.

Will they fail?

"Yeah!" he says, with the incredulity of someone who can't imagine a person allowing such a thing to happen.

Anthony walks to the lab down the hall to cut out the pieces of his cellphone holder. Back in the classroom, another student—one of the five involved in the rude YouTube comment debacle—gets into a verbal altercation with the teacher, who, exasperated, throws him out of class.

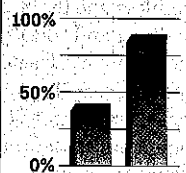
"Of course there were goofballs ten years ago, but I don't think the ratio was as high," the teacher, Jeff Smith, says afterward. He's taught in this district for twenty-four years. "A video game, you get killed or whatever, you push reset. You can reset a thousand times. For some of this stuff, there's no reset button, and when something doesn't work, they're over it."

Anthony stays late to use the laser-cutter even though the bell has rung, eyes shining as he watches the pieces of his project materializing out of a blank sheet of cardboard. He stands with his hands clasped behind his back, smiling. "I probably shouldn't be this excited," he says. And then he runs off to catch his bus. He doesn't bother to stop at his locker. What would he need to keep in there?

THE DIGITAL ADOLESCENT

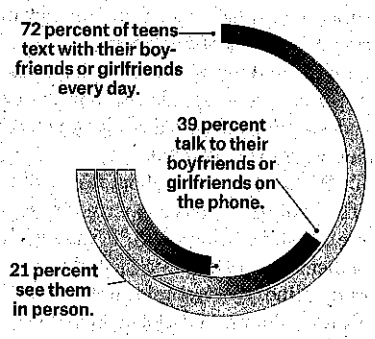
Today's high school experience is being largely lived, communicated, and recorded on electronic devices.

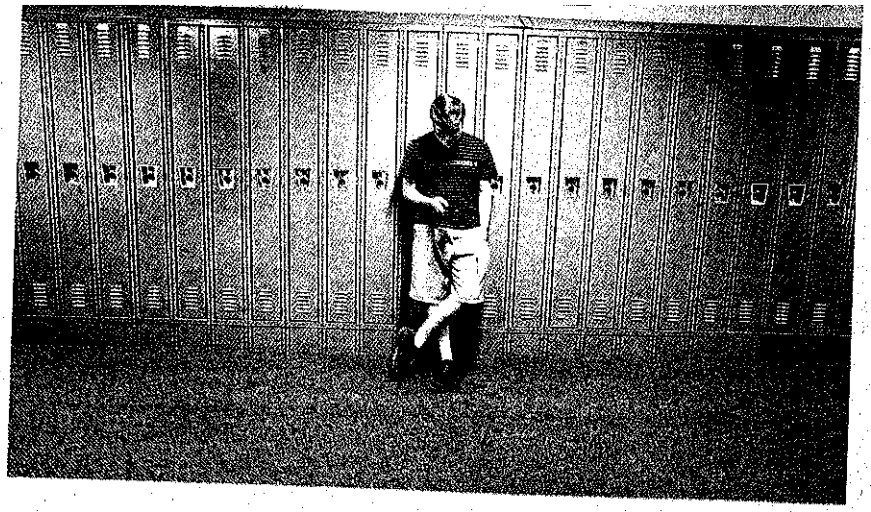
24%
of teens are online "almost constantly."



Percentage of teens who have or have access to a cellphone.

71%
of American teens are on Facebook. Half use Instagram and 4 in 10 use Snapchat.





TANNA

"We were the mean parents," Tabitha McMonagle says, stroking her son's hair while he presses his face against her hip. Her daughter, Brianna, wasn't allowed to have a phone in elementary school, which put her in the minority. She didn't get one until the beginning of seventh grade. She wanted a phone, but Tabitha and her husband said no. Not until she had a reason, such as after-school sports, to make it necessary, they said.

Now, at fifteen, Bri has a smartphone, a powder-blue iPhone 5c in a LifeProof case with a yellow softball sticker on the back. She wants Snapchat, but her parents have put their foot down about that. "Too many kids make stupid decisions with apps like Snapchat," her mom says. "That's a quick picture that you think is gone as soon as you send it. But the reality is, it isn't gone. I can take a screen shot of Snapchat. I don't think my children are going to send inappropriate images necessarily, but a lot of children have."

Bri has Instagram now, but she didn't for a long time. That was a battle. "She asked for it repeatedly, and I didn't see the purpose," Tabitha says. "You have a phone! You can text your friends, you can call them."

In the end, Tabitha joined Instagram first and did a search for all her kids. She found one—Bri's older half-brother. "He had everything in there—his school, what grade he was in, his phone number," Tabitha says. "One day when he was visiting—he lives in another house—I pulled up the sex-offender map. I said, 'These are just the ones we know about. They can find you.' Well, that worked. He was like, 'How do I get all this off here?'"

Tabitha has concerns about giving the vast capabilities of the Internet to people whose brains aren't fully developed. "We're in a climate right now where there is so little tolerance for children's mistakes," she says. "I understand that teenagers are children. It's important to make them wait until they're mature enough to understand that there are some risks involved with putting that much of your own information out there."

If you don't, you end up with problems like Zac Felli's: He created his first Facebook account at twelve and included his cellphone number and email addresses. "I wanted people to be able to contact me," he says. "I'm still trying to get rid of the aftermath of ad lists and servers that I've been put on. I still get spam every day. Oh my gosh. It's ridiculous."

At her softball games, where she plays shortstop, Bri keeps her cellphone in her bag. Her teammates do too. Sports are no time for distractions. The resulting scene is as peaceful as a sepia-toned photo, and about as ancient: Bri's father crouches behind the umpire, shooting photos with a real camera. A Canon. What the camera sees: Bri's hay-yellow braid flopped over her shoulder, a spray of freckles across her nose, a permanent blush from all the sun. The girls, clay-dusted in uniform, cheer for their teammates against the fence, no phones anywhere. It could be 1997, another era completely.

Except on the sideline, where Bri's tow-headed twin brothers, bored half into a stupor, look at exceptionally stupid ifunny.com photos on their phones. Nearby, a baby tries to grab an iPhone until a toddler brings her a flower instead. The baby tries to eat it.

ZAC SUMMER

The hardest ADHD test, in Zac's opinion, was the one with the stars. First, a technician strapped a motion sensor to Zac's forehead. Then Zac had to sit in front of a computer for twenty minutes staring at a white screen. Black stars with different amounts of points appeared every few seconds. The instructions: Click the space bar if you see a five-pointed star. Don't click it if you don't. "It was so hard," Zac says. "One: To keep paying attention. Two: To sit down and do nothing else for twenty whole minutes."

Many experts, Larry Rosen among them, will tell you that teens' constant multitasking is actually just task-switching, moving back and forth between different activities at a breakneck pace. Through multitasking, teens spend about seven and a half hours a day consuming about ten and three-quarter hours' worth of media. Every one of the students in this story, all of them good kids, sometimes receded into an alternate universe mid-conversation. They don't seem always capable of—or maybe interested in—doing a single thing for a long time. For example: the stars.

To many adults, this sounds calamitous. A generation of task-switchers who can't think deeply about anything. We're all doomed! But then ask teenagers if they feel drained by the relentless demands of the Internet, and they'll tell you they don't. "I wouldn't say I feel overwhelmed with all the technology, especially because my generation grew up utilizing it," Zac says. "Overwhelmed? No," Anthony says. "I was born with technology around." And so what if teens are multitasking all the time? We're not any better at it than they are, and the Internet isn't going away. Maybe they do get access to the entire world before they're ready. Can we expect them to choose the opposite?

In the short story "All Summer in a Day," by the science-fiction writer Ray Bradbury, a young girl from Earth named Margot has moved to Venus. There she finds that it rains constantly, the sun emerging from behind the clouds for only a few hours on a single day every seven years. Margot remembers sunlight from her time on Earth. She misses its heat and light. The other children, the children of Venus, who have never experienced anything but the incessant pinging of droplets, aren't bothered by the rain at all.

The test results say that Zac has mild ADHD. But he also has a 4.1 GPA, talks to his girlfriend every day, and can play eight instruments and compose music and speak Japanese. Maybe his brain is a little scrambled, as the test results claim. Or maybe, from the moment he was born, he's been existing under an unremitting squall of technology, living twice the life in half the time, trying to make the best decisions he can with the tools he's got.

How on earth would he know the difference?

300
A teen Facebook user's median number of friends.

33%
are friends with people they have not met in person.