



## Caught in the Web: Educational Risks and Rewards of Online Learning

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*This case study takes place at a fictional school in Bavaria, the southernmost province of Germany. Selma Morgenstern, the main character in the case, is a principal or Direktorin at a type of school called the Gymnasium, which is the university-track secondary school serving grades 5 through 12. The non-university, vocational track schools in Germany, the Realschule and the Hauptschule, offer a reduced educational schedule compared to the Gymnasium. The Realschule offers grades 5 through 11, while the Hauptschule offers grades 5 through 10. At the end of 12<sup>th</sup> grade in the Gymnasium, students take the Abitur, a national standardized examination in several subject areas that qualifies them for enrollment at universities. In an effort to modernize their educational offerings, schools at all levels in Germany are quickly implementing educational technologies and virtual learning opportunities, for which Germans use the term Digitalisierung. The school in this case is responding to a funding program released by the Bavarian Kultusministerium—i.e. Bayerisches Staatsministerium für Unterricht und Kultus—which is roughly equivalent to state departments of education in the USA. Although the program is fictional, it is in line with the existing approaches to school funding in the Bavarian “Master Plan Digital II,” which already includes several funding programs to improve technological infrastructure, introduce IT administration in schools, and purchase devices for students, among other things.<sup>1</sup>*

<b>Setting</b>	
Meister-Eckhart-Gymnasium (MEG), a university-track secondary school (ages 10-18) in Bavaria, Germany	
<b>Primary Characters</b>	
<b>Selma Morgenstern:</b> Principal, or <i>Direktorin</i>	<b>Hilde Schmidt:</b> Social studies teacher
<b>Dr. Edith Kranz:</b> School psychologist	<b>Jonas Müller:</b> Physics and German teacher
<b>Tarik Demir:</b> Physics and German teacher	<b>Maria:</b> Jonas’ student

When Selma Morgenstern, principal of the humanities-oriented Meister-Eckhart-Gymnasium (MEG),<sup>2</sup> received the email about the highly competitive new funding program for hybrid learning initiatives from the *Kultusministerium*,<sup>3</sup> she wasn’t surprised. The push for more blended models of teaching and

<sup>1</sup> For examples of existing funding programs, see: <https://www.km.bayern.de/lehrer/foerderprogramm.html>

<sup>2</sup> German *Gymnasia*—the university-track secondary school which includes grades five through twelve—typically have an orientation towards the humanities (*humanistisches Gymnasium*) or towards modern languages (*neusprachliches Gymnasium*), but other types exist as well: e.g. science-and-technology-oriented, music-oriented, athletics-oriented or “European” Gymnasia.

<sup>3</sup> The *Kultusministerium*—i.e. *Bayerisches Staatsministerium für Unterricht und Kultus*—determines curricula, grading standards, administrative procedures, professional development goals and so forth.

learning—which would shift more of students’ learning time both in and out of school onto online platforms—had been coming for a long time.<sup>4</sup> But until now, it had always seemed to be put off by some more burning issue or problem, at least at MEG. COVID-19 changed that, exposing on a grand scale just how unprepared schools like hers were for creating productive and satisfying online learning environments. Now the *Kultusministerium* was offering schools financial support, up to 750,000 Euro<sup>5</sup> per school, for compelling hybrid learning programs developed by principals around Bavaria. Successful schools would make up a group of “Digital Lighthouse Schools” to serve as public examples of effective digitalization<sup>6</sup> in the school environment. Participating schools would offer what the state was calling a “hybrid curriculum,” meaning that at least 50% of the learning time in school would occur in online spaces and platforms, with additional allotted time for classes in coding and programming. Although applying would be taxing and time-consuming, Selma was excited that she would have some freedom to create a plan tailored to her own school. MEG’s move in the last few years towards emphasizing the digital humanities really seemed to resonate with parents and others in the MEG community, and she had already begun hatching some ideas for expanding their approach in case something like this came along. Putting the proposal together would be a perfect task for the summer break coming up in just a few weeks, when her husband would take the kids to his parents.

Although Selma was looking forward to getting started, she was a little daunted as well. Funding programs like this always came with strings attached. If MEG were successful, she would have to submit bi-yearly reports to the *Kultusministerium* on the progress of implementation and its impact on student satisfaction and performance. Also, the money could be used only for “structural improvements” in the school: new classroom technologies, approved online learning platforms, some technical support staff, and only an initial technological training course for teachers. She worried about her teachers’ willingness to adopt the new technologies, especially if they didn’t have adequate training. Several had already expressed frustration with MEG’s finicky new smartboards.

Moreover, just last week, she had to sit in a steering committee meeting on the issue of cyberbullying. Several students had created fake and highly offensive Facebook pages that posed as a 10th grade girl’s profile; the girl missed several days of school to receive psychiatric counseling in the aftermath.<sup>7</sup> In the same meeting, teachers called for more restrictive online protections on the school’s computers, since several 12th grade boys had been caught looking at pornographic material in the computer lab. Selma had also experienced first-hand how difficult it was to reach many of the school’s weakest performing students when instruction moved online during the lockdowns in April 2020 and between December 2020 and June 2021. The model of instruction they adopted relied on students having adults at home to help them structure their online days—but not all families could provide such intensive support. Several did not even have an internet connection in their homes. Even the students who regularly showed up to

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<sup>4</sup> As an example, the Bundesministerium für Bildung und Forschung (BMBF) issued its Strategie “Bildungsoffensive für die digitale Wissensgesellschaft” in 2016, which calls for a “digital transformation of the educational system” (p. 5). This program supports moving more learning time in and out of schools into digital settings. See: [https://www.bmbf.de/files/Bildungsoffensive\\_fuer\\_die\\_digitale\\_Wissensgesellschaft.pdf](https://www.bmbf.de/files/Bildungsoffensive_fuer_die_digitale_Wissensgesellschaft.pdf)

<sup>5</sup> Slightly more than \$850,000 US dollars.

<sup>6</sup> Digitalization—in German, *Digitalisierung*—is the term that is used for applying technology in educational spaces.

<sup>7</sup> According to the “Jugend, Information, Medien”-Study 2019, one in five school children report having had false information about them distributed through digital channels. A case similar to the one described is reported in an article from the November 26th, 2020 edition of the *Süddeutsche Zeitung*:

<https://www.sueddeutsche.de/politik/cybermobbing-wenn-das-internet-zur-qual-wird-1.5128418>

online class rarely turned on their videos or interacted with the class as a whole. Thus, many teachers expressed concern that these students had missed the equivalent of a year of learning. Although Selma was still hopeful that a systematic blended learning program could work, her experience showed her that digitalization brought with it thorny issues of equity and distribution.

With a mixed sense of caution and excitement, Selma decided to talk to a few colleagues about how much online learning was right for students. She made her way, first, to Edith Kranz, the school psychologist who had dealt with the cyberbullying problem. Selma hoped that Dr. Kranz might have some academic insight on the issue, as she would regularly cite psychological research to support her positions in school policy meetings. Dr. Kranz was happy to voice her opinion about the matter.

“Well, there are pros and cons of hybrid learning models from a psychological perspective, Frau Morgenstern,” Dr. Kranz said. “Hybrid learning can help students who are more passive and shy in traditional settings gain a sense of self-efficacy in their education, and it can allow them to learn in the spaces, timeframes and manners that suit them. Also, online learning allows for gamifying course material, which many students really respond to.”<sup>8</sup>

Selma nodded, but sensed the cons coming. “What about the downsides, then?”

Dr. Kranz sighed, “Unfortunately, when students are required to be online for their learning, they spend even more time on social media than they already do. Social media can be a major distraction from students’ learning activities.”<sup>9</sup>

“Can’t we do something about that?” Selma queried. “What about social media locks, mouse motion detectors, or even eye-trackers? I thought there were technologies to monitor when students begin to veer off task.”

“Unfortunately students are quite adept at finding their way around these things,” Dr. Kranz replied. “Especially at home, students have no help from professionals to keep them on task and away from misinformation and harmful content. It seems to me that we need to reach students somehow with real human support even in these spaces, but it can be so difficult.”

Overhearing Kranz’s worries, Hilde Schmidt, a social studies teacher and enthusiastic climate activist, burst into the office with her usual gusto. “That’s what I’ve been trying to tell you, Frau Morgenstern!” Hilde exclaimed. “We need to get students off their devices and spending real, quality time in *nature*. Kids belong in the garden, in the fields, in the forest—not cooped up in front of a monitor that’s making their eyes square!”

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<sup>8</sup> These are some of the standard advantages that are associated with online learning in its various forms. See, for example, Northeastern University’s list of “The Benefits of Online Learning,” which plugs its online degree programs: <https://www.northeastern.edu/graduate/blog/benefits-of-online-learning/>. For research on the link between gamification and online learning, see: A. Antonaci, R. Klemke, & M. Specht, M. The effects of gamification in online learning environments: A systematic literature review. *Informatics*, 6, 3 (2019), pp. 1-22.

<sup>9</sup> According to the “Jugend, Information, Medien”-Plus Study 2020, German students reported using friends via chat as the top source of help with online assignments during the 2020 online learning phases resulting from the Corona lockdowns. See: [https://www.mpfs.de/fileadmin/files/Studien/JIM/JIMplus\\_2020/JIMplus\\_2020\\_Corona.pdf](https://www.mpfs.de/fileadmin/files/Studien/JIM/JIMplus_2020/JIMplus_2020_Corona.pdf). For research supporting the distracting influence of social media in online learning, see: R. B. Hollis, C. A. Was, Mind wandering, control failures, and social media distractions in online learning. *Learning and Instruction*, 42 (2016), pp. 104-112; E. Wood, L. Zivcakova, P. Gentile, K. Archer, D. De Pasquale, A. Nosko Examining the impact of off-task multi-tasking with technology on real-time classroom learning. *Computers in Education*, 58 (2012), pp. 365-374

Selma couldn't help but chuckle at that. "Come on, Frau Schmidt. Screens don't make eyes square."

"I don't *really* think screens make eyes square," Hilde acknowledged. "But my point is the same. We are divorced from the slower, natural processes of life because we're fixated on our phones, tablets, laptops, TVs and whatever else. Why do you think we have a climate change problem? Because we don't know how to care for the environment anymore. It's not as flashy and fun as that ridiculous smartphone game Candy Crush. If we as a school encourage even *more* screen time, don't you think we are missing a chance to help students to develop a relationship with the natural world?"

"It's a really important point," Selma admitted, "but do the two necessarily exclude each other?"

"That's a tough question," Dr. Kranz remarked. "I'm not sure they do, but I do agree with Hilde's worries about screen time, if for a slightly different reason. Cyberbullying has been on our minds, of course, but I'm also worried about how normal it has become for adolescent girls to share explicit pictures and videos of themselves to boyfriends and sometimes complete strangers online. I do wonder whether students get themselves into this kind of thing because they're just looking for something exciting. Boredom often begets stimulation-seeking behavior, even if it does not bring the person pleasure *per se*."<sup>10</sup>

Selma sighed again as she turned over Dr. Kranz and Hilde's points in her head. She admittedly felt relieved when they both headed off to break duty. With ten more minutes of the break period, Selma sought out the teachers' lounge. Across the room, she saw Tarik Demir and Jonas Müller in conversation. Jonas and Tarik were good friends—both had the subject combination Physics and German and both were almost universally loved by students.<sup>11</sup> They were also some of Selma's closest colleagues at MEG, and she was excited to get their take on submitting an application for the funding program. As she approached, they paused their conversation.

"Yes, Selma? What's on your mind?" asked Jonas, smiling.

"Is it so obvious that something's on my mind? I'll have to work on my poker face. Well, I'd like to put together an application for this new funding program for hybrid learning that the *Kultusministerium* just released. They are offering close to a million Euro to update our technological infrastructure, but I do have some reservations. I mean, our students did not do well with online learning during the Corona lockdowns. They were practically begging to come back to school, even the 12th graders!"

"Oh I wouldn't worry about that," replied Jonas. "That was a special situation. I've been using the flipped classroom model for a long time, and my students love it. It frees us up for hands-on project work in class. Plus, students' performance in the learning-check assignments I use can be recorded and measured with my analytics software, and it sends me automatic notifications whenever a student is falling behind. It's pretty sweet."

Selma relaxed a bit, grateful for the positivity. "Well, what would you focus on in the application? What does our school really need?"

Jonas was eager to continue: "You should definitely put in a budget line for high-quality laptops. So many of our kids were trying to do their online learning during the lockdown on their smartphones. It was a

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<sup>10</sup> See S. W. Bench & H. C. Lench, Boredom as a seeking state: Boredom prompts the pursuit of novel (even negative) experiences. *Emotion*, 19, 2 (2019), pp. 242-254.

<sup>11</sup> Bavarian teachers are required to have at least two subject specializations in which they offer courses.

disaster. And tablets just don't work as well as a full-powered computer. It's crazy that we can't offer all our students the tech they need to learn in the 21st century."

"So would you be for moving most of the curriculum online, then?" asked Selma.

"In my opinion," Jonas urged, "the more online learning we have, the more individualized, dynamic and flexible instruction we can offer our students, not to mention the innovative games, activities, and performance data. There are always downsides to things like this, but the tools available to us there are invaluable."

Jonas broke off, his eyes flicking to the door. "Oh," he said, "Maria just poked her head in the door. She probably has a question about our Projectiles Project. Do you mind if I invite her in really quick?"

"Sure," Selma and Tarik both responded.

"Hi, Herr Müller!—uh, guten Tag, Frau Dr. Morgenstern, hallo, Herr Demir. Sorry to bother you. I just have a very quick question for Herr Müller. There's this great animation of projectile motion that I found on Reddit, but I can't find the source behind it. It was just posted by some random user. Can I use it for our Projectiles Project anyway?"

Jonas nodded, "Well, that depends, Maria. Have you checked whether the science is even accurate? What initial conditions are modeled? I'm happy as long as it accurately portrays projectile motion given appropriate initial conditions. Check up on this, and then just put as your source the url of the page."

"Thanks!" Maria exclaimed.

As she whirled to go, Selma burst out, "Wait! I have a question for you about digitalization at our school, Maria. If I gave you unlimited money, what would you do with it to update our learning here at MEG?"

"You're asking me? Hmm. I've really liked Herr Müller's flipped-classroom approach. Maybe we should encourage this more often? It's cool seeing how much we can learn online. Also, with more flipped classrooms, maybe we'd have more time for social projects and initiatives, like that organic food drive the SMV<sup>12</sup> did last Christmas or the fair-trade events we've held in the past. We call ourselves a fair-trade school,<sup>13</sup> but we could definitely do more to advance that cause."

"Good point. But come on, Maria," Tarik teased. "Are you trying to tell me that my technology-free in-person classes are *that* boring?"

Maria laughed, "No! Hmm, I guess that's a good point, too. I wouldn't want to miss out on those hilarious re-enactments of Faust that Herr Demir does with us. Hard to do those online. Plus, don't sell yourself short! You do use the chalkboard."

"Thanks, Maria," Selma laughed, dismissing her. After Maria was out of earshot, Tarik continued the discussion.

"Maria's great. But I want to get back to our original topic. One thing I think you overlooked, Jonas, is all the issues students like Maria were having with their classwork during the COVID lockdowns. I had so many students tell me that the material seemed more abstract or just more difficult to grasp in the

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<sup>12</sup> SMV stands for *Schülermitverwaltung* and is the equivalent of student government

<sup>13</sup> Schools in Germany can take part in various special programs such as the fair-trade program in Nuremberg in order to develop a unique pedagogical profile. Other programs include civic educational programs like "Schule mit Courage," which is devoted to combating racism in schools.

virtual environment. Maria herself complained that online learning was a real chore, and she's one of my most motivated students."

Jonas interrupted, "Well, yes that's true, but..."

"Hear me out," urged Tarik. "The students I talked to reported sitting for hours on end in front of their computers, completing assignments that were only ever graded by a web app, and they really missed the face-to-face interaction with teachers and other students. Some students even mentioned feeling listless and having trouble getting out of bed.<sup>14</sup> When learning becomes such a dehumanized affair, we lose so much of the motivational power of the student-teacher relationship. When I teach my German classes, I want my students to feel a part of something that matters—a living, breathing community of people who think Schiller is just as cool as Justin Bieber. Online, this stuff just seems like one more thing to learn for a test."

"Aren't you overreacting?" Jonas asked.

"Look, digital technologies are tremendously powerful in some ways, but very weak in others. Unfortunately, we tend to overemphasize what they can do and forget what we can do as human beings, person-to-person, without screens involved. Think about how transformative a passionately-told personal story can be, or a well-orchestrated discussion, or a spur-of-the-moment decision to follow the interests and insights that students share spontaneously. I think students get enough of the "this is what technology can do" message from the world outside, and they seldom hear how their flashy interfaces and user-friendly algorithms can limit and distort their experience. That's why I try to give my students something different – something non-algorithmic, screen-less and uniquely human – in my classroom."

Selma glanced at the clock. "The break is ending, but thank you for thinking this through with me. I do have to admit, though, that I think I'm more confused than when our conversation began!"

Laughing, they went their separate ways. Selma returned to her desk determined to at least get something down on paper today. But she found that her efforts were foiled by a flurry of questions swirling in her head. Should she apply to this program at all? Would increasing learning time on digital platforms expose her students to more moral and social hazards than they already faced? What would be gained and lost in the transfer of learning and instruction to online spaces? Could the school balance the risks and rewards of online learning?

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<sup>14</sup> Diagnoses of depression and anxiety disorders among school-age children increased in Germany during the COVID-19 lockdowns by around 10% compared to pre-lockdown rates. See: Kostev, Karel, Kerstin Weber, Steffi Riedel-Heller, Christian von Vultée, and Jens Bohlken. "Increase in depression and anxiety disorder diagnoses during the COVID-19 pandemic in children and adolescents followed in pediatric practices in Germany." *European child & adolescent psychiatry* (2021): 1-7.