Supporting Intrinsic Motivation Through Educational Technologies and Teacher-Led Activities

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Student motivation in the classroom is of critical concern for many educators. Ultimately, students who are motivated by—and deeply engaged in—their own learning adapt better to a classroom environment and perform considerably higher academically than their unmotivated and unengaged peers (Fredricks, Blumenfeld, & Paris, 2004).

Over the last thirty-five years, learning environments that foster and undermine motivation have been widely examined in the fields of education and psychology. While the field of motivation in classroom settings is rich with research, the application and understanding of motivational research in the realm of educational technologies is less prominent. As classrooms continue to rely more heavily on instructional models that blend a standard curriculum with digital platforms, a critical and thoughtful examination of the application of educational technologies in the classroom is important to develop, along with an understanding of the ways in which digital tools may enhance or undermine student motivation.

The purpose of this white paper is to highlight well-researched methods of supporting students' intrinsic motivation in educational settings and to apply that research to selecting and using educational technologies.

Motivation Frameworks

Researchers have identified reliable patterns of beliefs and behaviors that guide student engagement and can help shape instructional practices in the classroom (Kaplan & Maehr, 2007; Ryan & Deci, 2016). These frameworks of motivation are helpful in understanding student engagement in educational settings, and include self-determination theory, attribution theory, and goal orientation theory. Understanding theories of motivation helps shift focus from primarily examining the content of curricula in the classroom to considering how concepts are taught in ways that are relevant and engaging.

Across frameworks of motivation, researchers generally agree that learning is most productive when students are self-regulated and challenge-seeking (Clifford, 1990; Reeve, 2009; Ryan & Deci, 2016). A meta-analysis of over 100 studies on using incentives as motivation found that intrinsic motivation is associated with greater levels of effort, satisfaction, and learning; meanwhile, incentive rewards (extrinsic motivators) dampen an individual's intrinsic motivation, particularly for otherwise interesting tasks (Deci et al., 1999).

When synthesizing research on motivation, three principal characteristics emerge as fundamental to intrinsic motivation and positive achievement outcomes: students' need for autonomy, competence, and relatedness/meaning (Dweck, 2015; Kaplan, Middleton, Urdan, & Migdley, 2002; Ryan & Deci, 2016).

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Autonomy
Autonomy is the need for an internal sense of control and agency—the ability to self-direct behavior and independently pursue goals, interests, and desires. Research has shown that the structure of tasks, the nature of teacher feedback, and the extent to which learning opportunities foster autonomy (compared to limiting independence) can impact engagement in tasks and development of academic skills.

Competence
Competence relates to students' need to feel effective, capable, and successful at tackling learning challenges. The feedback students receive about the purpose of an activity, along with the role of failure on the path to success, can have a significant impact on their own personal theories about how intelligence works and the rationale for their successes.

Relatedness
Relatedness/meaning pertains to the notion that learning experiences need to be placed into the contexts of a student's community, personal goals, or interests—or connect to a larger body of knowledge—in order to be salient. Engagement among students is increased when meaningful connections are made between schoolwork, the student's world outside of school, and the student's personal and academic goals (Assor et al., 2002).

Selecting an educational technology program

Choosing the appropriate educational technology program for students can have a tremendous impact on supporting intrinsic motivation. Although extrinsic incentives (e.g., badges) frequently populate educational technologies, there are better approaches to engaging students that can maximize students' intrinsic motivation, support their persistence with challenging tasks, and encourage the development of a healthy mindset about learning.

Given that intrinsic motivation supports lifelong learning, here are nine questions to ask when evaluating digital programs that claim to support motivation, based on the three concepts detailed previously.
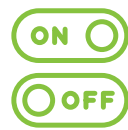
Does the program have intuitive controls?

Students should be able to work independently and navigate the program on their own without requiring adult assistance. If a student needs to consult with a teacher or peer on program navigation, that likely undermines both the student's sense of autonomy and the benefit of integrating a digital tool into the classroom for individual work. *(Autonomy)*

Does the program provide students with choices for their learning path?

Students are more motivated to continue in a program when they feel like they are in control of their own pace and progress. A program that offers a choice of activities more actively engages students in their own learning than a program that forces all students down a prescribed pedagogical path. *(Autonomy)*

Does the program provide adaptive scaffolded support to allow students to work to their own ability level?

Without proper scaffolding at each student's ability level, students may be forced through the program too quickly (leading to frustration) or too slowly (leading to boredom). *(Autonomy and Competence)*

Is the program personalized?

Beyond simply saying "Hi, Student," the program should provide enough feedback to support students in monitoring their own goals and progress. Each student should have a way to monitor what has been completed and what still needs to be achieved, based on their personal activity. An example of this is a personalized student dashboard. *(Autonomy and Competence)*

Is there a cohesive narrative or backstory to ground students in the "world" of the program?

It should be clear to students where they have been and where they are going within the program. The activities in the program should follow a predictable structure or pattern to minimize confusion or a sense of being lost or disoriented. *(Relatedness/Meaning)*

Is there a way to share and celebrate success with peers and parents?

Acknowledging student achievement with teachers and peers helps connect students to others through shared experiences and build a community of support around the use of a program. *(Relatedness)*

Is it clear to students that their work online relates to their world offline?

One of the strongest characteristics that dictates the degree to which students are motivated is their perceived value of a goal to their own lives. For example, understanding that the completion of program activities is a component of a larger learning goal is far more motivating than completing an isolated activity for the sake of busy work or because "the teacher said so." *(Relatedness)*

Are the characters/storylines/features interesting enough to engage students in the program

The background features of the program should be memorable and draw in the student without being so distracting that they take away from the learning objective and cause students to click on items or images unrelated to the task. On the opposing side, if features are too bland, students may find other areas of the computer/tablet to interact with instead of the educational program. *(Relatedness)*

Does the program provide actionable data to the student/teacher or parent/child?

Data from program use should be able to support meaningful discussions of progress, judge effectiveness of the program, and account for time spent using the program. *(All)*

Activities and actions to support intrinsic motivation

Contrary to these three tenets of intrinsic motivation, educators and parents often use external motivators, such as rewards and punishments, to coerce desired behaviors (Niemiec & Ryan, 2009). Although these solutions may be effective in the short term, they often undermine students' long-term intrinsic motivation for

learning (Dweck, 2015; Kohn, 1993). Activities and actions that further satisfy innate needs and promote a sense of well-being to increase engagement and boost learning can be integrated into the daily routine in a face-to-face or virtual instructional setting.

Autonomy is satisfied by:
- Instructing students to write their daily and/or weekly learning goals

- Allowing students to be part of problem-solving (e.g., sharing devices at home)

- Guiding students to build new knowledge based on their prior knowledge

- Encouraging students to be reflective about their learning— What was easy? What was difficult? What did I do when it was difficult?

Competence is satisfied by:
- Celebrating student achievements in a community setting

- Sending personal emails to students (with parents cc'd) to highlight achievements

- Affirming with students that it's OK to ask for help and encouraging them to seek help when they are struggling with a concept or skill

- Providing personalized instruction at a student's point of need

Relatedness is satisfied by:
- Grouping and scheduling time for students' collaborative online work

- Designing activities related to a text that facilitate peer-to-peer interactions (e.g., researching and sharing three fun facts about a person, place, or event mentioned in a text)

Summary
While there are many motivational frameworks, this paper highlighted three principal characteristics fundamental to intrinsic motivation and positive achievement outcomes: autonomy, competence, and relatedness. When selecting an educational technology program, educators must not only gauge whether the program is pedagogically sound but confirm it adheres to the three tenets of motivation, as this will ensure students want to use it.

The proliferation of new educational technology products to support learning provides a number of options for students, teachers, and parents. Although the program you choose does not need to possess every feature in order to be deemed motivational, educational technology should be rich in elements that support intrinsic motivation, rather than containing "chocolate-covered broccoli" that sweetens the learning with a sugar coating of badges and stickers. By keeping in mind the nine questions listed previously and remembering the tenets of competence, autonomy, and relatedness, parents and educators can better navigate the digital landscape to find educational technology tools that are engaging and effective in generating authentic learning, not just providing "edutainment."

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