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Using Motivation Design Principles to Teach Screencasting in Online Teacher Education Courses

John Ranelucci
CUNY Hunter College

Bradley W. Bergey
CUNY Queens College

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Theory and Literature Review: Introduction to Motivation Design Principles

The connection between research and practice in education is paramount. Being able to rely on easy-to-use, evidence-based, theoretically situated, and effective practices is critical, especially in times of uncertainty such as the current international crisis. The sudden transition from face-to-face to online learning has been a difficult but necessary response to the COVID-19 pandemic, and has forced many educators—ourselves included—to quickly develop instructional activities for distance learning. In doing so, we relied on five motivational design principles to guide modifications to online formats in our courses at two colleges in New York City. In this brief paper we describe and demonstrate how theoretically and empirically grounded motivational design principles can be used to modify or develop motivational, relevant, and engaging content for online preservice teacher education courses.

It is especially important to support preservice teachers' motivation and emotion during this incredibly stressful time. The burgeoning field of teacher motivation (Han & Yin, 2016; Richardson, Karabenick, & Watt, 2014) has foregrounded the importance of motivational factors, such as intrinsic values and perceived teaching ability in preservice teachers' decisions to join and remain in a teaching career (Watt et al., 2012). Preservice teachers' motivational profiles are associated with career commitments such as satisfaction with career choice, planned persistence, and planned professional development (Bergey & Ranellucci, 2020). Furthermore, prior to the pandemic, preservice teacher attrition and teacher burnout was already a significant concern and has likely been exacerbated due to COVID-19. Prior research suggests that teachers'

self-efficacy and their students' motivation predict teacher burnout (e.g., Skaalvik & Skaalvik, 2010; 2017). Consequently, by embedding motivational and emotional supports in teacher training, we may create more resilient future teachers who have high levels of teacher self-efficacy and possess the necessary tools to support student motivation. Taken together, supporting preservice teachers' motivation and emotion will help prepare future teachers to navigate their unpredictable post-COVID-19 teaching career.

One way to make sense of the wide-ranging literature on motivation in education and identify practical implications is to use five motivational design principles (first column in Table 1) proposed by Linnenbrink-Garcia, Patall, and Pekrun (2016). These design principles bring together a breadth of theoretical and empirical work focused on motivation and emotion in education (e.g., achievement goal theory, Urdan & Kaplan, 2020; expectancy-value theory, Eccles & Wigfield, 2020; control-value theory, Pekrun, 2006; self-determination theory, Ryan & Deci, 2020; attribution theory, Graham, 2020). Synthesizing this complex literature into five distinct instructional principles provides a useful heuristic for instructors to promote student success (e.g., increase student persistence, engagement, positive emotions, confidence, interest, creativity, and achievement). We demonstrate how the principles can easily be applied to activities in an online teacher education course for pre-service teachers (undergraduate- and masters-level educational psychology courses). In the next section we provide an example of how these design principles were used to develop an assignment in two education courses that transitioned from in-person to remote learning mid-semester.

Table 1.

Design principles and their applications to screencast assignment

Design Principle	Application to Screencast Assignment
Principle 1: Support competence through well-designed instruction, challenging work, and informational and encouraging feedback.	<ul style="list-style-type: none"> • Task was novel and challenging for most students • Instructor modeled screencasting process and product • Instructor and classmates provided feedback
Principle 2: Support students' autonomy through opportunities for student decision making and direction.	<ul style="list-style-type: none"> • Students chose topic • Students chose partner or to work alone • Students chose software
Principle 3: Select personally relevant, interesting activities that provide opportunities for identification and active involvement.	<ul style="list-style-type: none"> • Students developed timely professional skill • Students pursued personally relevant topics • Students was active and creative • Students expressed personal and professional identity
Principle 4: Emphasize learning and understanding and de-emphasize performance, competition, and social comparison.	<ul style="list-style-type: none"> • Instructors encouraged growth and learning • Assignment was low stakes
Principle 5: Support feelings of relatedness and belonging among students and with teachers.	<ul style="list-style-type: none"> • Students and instructor held online discussion of videos • Videos contributed to classmates learning • Students could work in partners

Process: Example application of design principles

Screencasting, which refers to the digital recording of actions that occur on a computer screen, is a useful tool in developing original video content for online instructional environments (e.g., recording a lecture or instructions for how to complete a task). Furthermore, learning how to use screencasting software will likely become an especially important professional skill for teachers in a post-COVID-19 world. Research suggests that students have a positive perception of instructional screencasts, and that they can support learning and performance (e.g., Green,

Pinder-Grover, & Millunchick, 2012); yet many novice teachers experience anxiety with using technology and lack self-efficacy for integrating technology in their teaching (Anderson & Maninger, 2007). In our courses, students were asked to create a brief instructional screencast about a course-related concept. Students used various open source software to create their screencasts, including screencast-o-matic.com, loom.com, and screencastify.com. In the example described here, students created a screencast to showcase a digital technology that could be used in their certification area (see Appendix A for assignment description).

We used motivational design principles to guide the design and implementation of various aspects of the activity, as summarized in Table 1. We emphasized the relevance, importance, and timeliness of being able to create short instructional videos, especially in light of the current transition to online teaching (Principle 3). Students were encouraged to view the project as an opportunity for professional growth by expanding their own technology skills and knowledge and sharing these with classmates (Principles 4 and 5). Students had autonomy in choosing the topic, whether they worked individually or with a partner, and what screencasting application they used (Principle 2 and 5). Since many students were new to screencasting, we scaffolded the activity with guided instruction, including modeling the process and outcome (Principle 1; for an instructional model, see <https://tinyurl.com/jtate-screencast>). Students received instructor feedback via a rubric and peer-feedback via an online discussion activity (Principle 1, 4, and 5).

Results

Students reported overwhelmingly positive experiences with the activity. *First*, in written reflections, students indicated that they perceived the activity to be a useful, authentic task that helped them develop necessary professional skills (Principle 3; personal relevance). All students

reported that they found the activity at least somewhat useful, and the majority found it highly useful. For example, one student remarked that the assignment felt like it was an exercise to help hone a skill rather than a typical course assignment. Similar patterns emerged for perceived intrinsic value. Results suggest students perceived value in the activity including an increase in perceived utility value for technology (i.e., screencasting), an important predictor of intentions to integrate technology in teaching (Anderson, Groulx, & Maninger, 2011; Teo, Lee, & Chai, 2008). *Second*, nearly all student reported high levels of self-efficacy for creating instructional videos after the task, and over half of the students indicated that the assignment had increased their confidence (Principle 1; competence). This support for novice teachers' self-efficacy is important given self-efficacy beliefs are powerful predictors of technology integration in teaching and buffers against burnout (Ertmer & Ottenbreit-Leftwich, 2014; Lee & Lee, 2014; Sang, Valcke vanBraak, & Tondeur, 2010; Skaalvik & Skallvik, 2010). *Third*, students expressed appreciation for the lively online discussions (Principle 3; active involvement) that resulted from sharing and commenting on videos (Principle 5; relatedness and belonging). Students also valued the peer-feedback they received on both the video content as well as the mechanics of creating effective screencasts (Principles 1 and 4; encouraging feedback; emphasize learning and understanding). These findings are consistent with research indicating the importance of social connection (Beachboard, Beachboard, Li & Adkison, 2011) and feedback (Ferguson, 2011) in preservice teacher training. *Fourth*, students expressed appreciation for the opportunity to showcase their unique ways of using technology in the classroom and for being able to explain how their personal technology interests could be applied to teaching (Principle 2; supporting autonomy), consistent with calls for autonomy-supporting practices in teacher professional

development (Vieira, 2009). In sum, anecdotal reports indicated self- and task-perceptions that supported student motivation while learning a new skill.

Practical implications

The broadest practical implication for teachers and teacher educators is to use these design principles to guide the development of instruction in online contexts (see Table 1). These principles are flexible, and can be used creatively and selectively (i.e., not all principles need to be embedded in every assignment); they can frame a specific assignment and, ideally, should be used to support a more comprehensive integration of motivation into teacher education courses and professional development training. To apply motivational principles effectively, teacher trainer should consider students' current self-perceptions, beliefs, and goals (Garner, Hathcock, & Kaplan, 2016; Garner & Kaplan, 2018). Accordingly, gathering information about trainees prior to training (e.g., pre-training questionnaire) will be useful to support motivation among pre-service and in-service teachers.

We highlight two specific practical implications of screencasting as a tool for teacher education. First, screencasting is a convenient and easy-to-use option for broadly sharing asynchronous instructional content with students, and for students to share information with each other (i.e., student presentations). The large majority of teachers have access to the necessary technology and software to create their own screencasts and should consider using this accessible approach in online and even face-to-face courses (e.g., flipped classrooms). Demonstrating that using technology in the classroom is useful and easy to use predicts preservice teachers' attitudes and intentions to use technology in their classroom (Ranellucci, Rosenberg, & Poitras, in press). Second, the topic of the screencasting assignment (i.e., showcasing educational technologies) was highly relevant to the technological knowledge that has become especially important during

COVID-19. Similar assignments can be used to advance preservice and in-service teachers' technological pedagogical knowledge (Koehler & Mishra, 2009).

Future research

While the motivational design principles were derived from ample theory and empirical research on motivation and emotion, little research to date has examined how practitioners interpret and apply these principles to design instruction, and to what effect. Researchers can begin this work by consulting with practitioners--teacher educators, pre-service and in-service teachers, instructional designers--to investigate the utility of these principles to guide instructional design in general, and in online settings in particular. Further, research is needed to understand how practitioners apply these principles to different instructional formats and socio-cultural contexts (e.g., Kumar, Zusho, & Bondie, 2018). A critical next step in this area is to understand how motivational design principles intersect with culturally sustaining pedagogy and equity issues (e.g., Ginsberg & Wlodkowski, 2019). The sudden transition from face-to-face to online learning in response to the COVID-19 pandemic, while stressful for everyone, was even more difficult for families and students who were also dealing with socioeconomic, disability, or other equity issues. Collectively, research in this area can support wide adoption and application of motivational design principles to create motivating and supportive learning environments. We see great promise in using these design principles in teacher education and for professional development.

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Appendix A

Technology Showcase Video

Assignment summary. You will create a brief (4-6 min) video in which you describe a digital technology that has relevant applications for your certification area. In the video, you will describe and demonstrate key features of the technology and explain how the affordances of the technology support teaching and learning. For an example, see <https://tinyurl.com/jtate-screencast>.

Assignment details

1. Choose a digital technology relevant to your certification area. A list of suggestions will be provided.
2. Record a video (4-6 minutes long) in which you describe and demonstrate key features of an educational technology. In class, you will receive basic instructions on how to create a screencast video, a video that records your voice (and image, if you'd like) and your computer screen. Your screencast will capture you talking about and using the digital technology.
3. Describe at least one concrete application of the technology to your certification area.
4. Describe the affordances of the technology that support teaching and learning and any other pros and cons that you see.
5. Post the video to the learning management system.
6. You may work with a partner if you choose.