Impacting Student Learning Using a Community-Building Discussion Platform Designed with Social Presence and Gameful Engagement

Suzanne Ensmann a

Aimee L. Whiteside b

aDepartment of Education, sensmann@ut.edu
bDepartment of English and Writing, awhiteside@ut.edu

The University of Tampa

401 W Kennedy Blvd, Tampa, FL 33606, USA

Abstract

How can instructors craft safe spaces for learning communities that seamlessly promote connectedness and course engagement outside the physical classroom? This one-year exploratory study completed at a mid-sized private university uses a social and gameful experiential (SAGE) approach to increase learner engagement and foster self-regulation. Interdisciplinary faculty explored the potential for a unique community-building discussion platform that uses a gamified social media-like platform to encourage self-regulation (Zimmerman, 2008) and motivate learners (n=103) to manage and master online scholarly discourse. Assessing how this technology impacts learner engagement, this study employs disruptive innovation theory (Christensen et al., 2011) and suggests that Yellowdig, one such disruptive technology, can foster positive changes, such as critical thinking and problem-solving skills. Researchers carefully and purposefully incorporated this technology into their courses to foster social constructivism (Vygotsky, 1997) to improve learners' self-regulation, cognition, and satisfaction.
Keywords: SAGE, social and gameful experience, self-regulated learning, SRL, gamification, Yellowdig
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Researchers use the SAGE acronym for this social and gameful experience to improve learning as it aligns true to the essence of sage, building knowledge through reflections and experiencing the learning. Selecting Yellowdig as a platform that builds SAGE into the technology, this interdisciplinary team of researchers incorporated this into eighteen classes to inspire self-regulated learning through active engagement. Using this SAGE method, this study aimed to answer the following overarching question:

What is the learner experience when disruptive technology is purposefully incorporated into courses to foster engagement and a) improve learner satisfaction, b) self-regulation, and c) cognition?

This paper focuses on the results related to self-regulated learning from students’ perspective and provides the second phase in a series of data analysis reports that examines and reports on the overall learning experience. While student satisfaction is important to the motivation and receptive frame of mind to build cognition, learning beyond the classroom takes more than just enjoyment and teacher-driven influence to improve cognition. Thus, researchers ground this study with a review of the literature regarding the need for SAGE learning and the necessity to foster self-regulated learning.

**Literature Review**

Surfacing up from the pandemic, an interdisciplinary team at a small private south-eastern university examined student experiences (n=507) during emergency remote learning (Ensmann et al., 2021). Findings from that study suggest a paradigm shift in education whereby disruptive technologies offer a means beyond traditional classrooms for interconnectedness and learning through social constructivism. The data revealed the depth of anxiety felt by students and suggests the need for increased empathy, communication, interaction, and flexibility from instructors and course communities to proceed with academic coursework, particularly for first-year college students. The findings elevate the importance of social presence as a literacy for learning in any modality, underscore the need to support the students’ mental health, and stress the urgency for online and remote learning readiness for current and future public emergencies (Ensmann et al., 2021). Despite the unexpected nature of emergency remote learning, this study pinpoints lessons learned, including connections, professors, and self-regulation matters (Ensmann & Whiteside, 2021; Whiteside & Ensmann, 2021; Meyer, K. A., 2011; Ulrich & Karvonen, 2011).

Additionally, after the initial study, researchers explored student satisfaction with SAGE learning leveraging Yellowdig in a multi-phased research project. The first phase in 2021 offers results using the electronic Learning Satisfaction Survey (eLss) (Ritzhaupt, 2019) to measure learners’ satisfaction (Ensmann & Whiteside, 2022). Participants (n=145) reacted with above-average satisfaction (nearly 80%) to questions regarding the learning experience. Initial findings suggest that instructors can leverage the gameful experience and social media-like engagement to foster critical connections and course satisfaction.

Next, in this next phase, researchers explored the concept of self-regulation and self-efficacy, which has been documented through the years by Pintrich (2000, 2004), Bandura, Rosenthal, and Schunk, and Zimmerman (Zimmerman, 2013), an educational psychologist in the 1960s, publishing the landmark work on self-regulated learning. Proposing social cognitive models, Zimmerman offered a cyclical phase model to compartmentalize the factors attributing to SRL (Zimmerman, 2008, 2013), examining three phases: performance, self-reflection, and forethought. This model revealed how proactive learners are distinguished by their performance and forethought through an adapted methodology called microanalysis.
This research suggested that those who set goals proactively, self-monitor with intention, use effective strategies, and are receptive to personal feedback attain mastery quicker and are motivated to learn.

Methodology
Design of Social and Gameful Experience (SAGE)

Designing SAGE for learning with intentionality includes articulating the rules; using points and accolades (collectibles in gameplay) to actuate competition, collaboration, and accountability; modeling and using data analytics to prompt engagement and networking; offer a dashboard with progress bar/data analytics to facilitate accountability and SRL. Each step is accomplished by modeling the behavior we want our learners to exhibit. Thus, instructors begin by posting the expectations that learners must post reflections and offer fresh ideas about the course content, clarify how many points they will earn for each post, and move into the benefits of using SAGE. For example, each time learners incite another to comment or provide a social media reaction (like a thumbs up, a heart, or a lightbulb), they achieve points and can win collectibles. When they provide reflections that offer insightfulness, help, community building, or superpowers, instructors can reward learners with collectibles that add to their points. Superpowers are awarded when learners demonstrate an air of creativity in posts and innovative applications of concepts or ideas. Finally, learners can use their progress bar to help them stay on track and manage their learning. In this respect, the paradigm shifts from cramming homework and discussion board posts into the night before something is due to engaging in learning as they already do daily through social media, motivated to connect to achieve recognition and knowledge just as they do with any other social media platform. Learners and instructors can flag posts that stray from the learning, and learners can even lose points if posting for points without merit of academic achievement. Ultimately, this SAGE design flips the experience to the learners leading the learning and the instructors facilitating the direction and deepening the connections. (See Figure 1.)

Figure 1
Yellowdig’s Illustration of Dynamic Changes in Course Discussions
Note: Yellowdig’s Illustration was provided with permission from Yellowdig.

Data Sample, Collection Instrument, and Analysis

To explore the SAGE experience related to SRL, two faculty members integrated Yellowdig into their instructional approach for graduate and undergraduate courses (n=12), and participants (n=103) were asked to complete a post-survey including SRL questions from fall 2021 through spring 2022. Participants were university students at both the graduate and undergraduate levels.

Since the literature points to the value of survey methods (Babbie, 1973; Fowler, 2009; Creswell, 2014), the researchers selected the Electronic Learning Satisfaction Survey (eLSS) to measure electronic learning satisfaction (Ritzhaupt, 2019) of e-Learning environments. Designed to be comfortable for the user experience, the instrument uses bipolar adjectives at opposite ends of a five-point Likert scale regarding satisfaction.

In this phase of the study, researchers developed a similar model to test for SRL. Using the same scale, where one was the negative sentiment and five the positive, researchers included bipolar phrases to address Zimmerman's SRL dimensions (2008) for learners to rate their self-regulation during SAGE learning. (See Figure 2.) Interrater reliability testing by three university research assistants familiar with the platform tested the questions and found 8 out of 12 questions 100% in agreement. Discussion ensued, and revisions were made for clarity until a consensus agreement of 100% was reached by all research assistants for the final questions (Creswell, 2014). Examples of questions requiring consensus include: I just try to get points and don’t think about it (1): I look for things to post and add that relate to the course (5); instructor led the posts each week (1): peers, and I led the posts each week (5); and, not planning ahead: planning ahead (5). This instrument also included a short-answer question to complement the quantitative data with qualitative data and provide an opportunity for participants to further elaborate upon their SRL with this SAGE approach: How have the experiences you had with Yellowdig changed you or contributed to your growth this term? Researchers administered an informed consent approved by the university institutional review board at the beginning of each course and pinned the link to the survey invitation to the top of the Yellowdig platform at the end of each term for participants to complete.

Figure 2
SRL Scale

```
I write my posts on the fly
I just try to get points and don't think about it
Instructor led the posts each week
No social media reactions
Not Learning about or from classmates
Not reflective
Not satisfied
Not motivated
I do not plan ahead
I do not feel like I have control
Not thinking about my learning
Not successful

I think carefully about my posts
I look for things to post and add that relate to the course
Peers and I led the posts each week
Social media reactions
Learning about and from classmates
Reflective
Satisfied
Motivated
I plan ahead
I feel like I have control
Thinking about my learning
Successful
```
Results

Descriptive analysis revealed a 100% response rate for participants (n=103) who completed more than three questions to evaluate their self-regulation with an overall average of 3.92 on a scale of one to five. Learners identified themselves as higher than average (above 3) on all questions regarding SLR except for posting habits (2.99) which revealed learners more often create posts on the fly rather than taking the time to think carefully about a post.

Table 3

SRL Scale Results: Overall Learner SRL Levels (n=103)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-I write my posts on the fly:</td>
<td>2.99</td>
<td>1.27</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5-I think carefully about my posts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-I just try to get points and don't think about it:</td>
<td>3.41</td>
<td>1.28</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5-I look for things to post and add what relates to the course</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-The instructors led the posts each week:</td>
<td>3.85</td>
<td>1.12</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5-PEers and I led the posts each week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-No social media reactions:</td>
<td>3.45</td>
<td>1.38</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5-Social media reactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Not Learning about or from classmates:</td>
<td>4.24</td>
<td>1.06</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5-Learning about and from classmates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Not reflective:</td>
<td>4.34</td>
<td>0.92</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5-Reflective</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Not satisfied:</td>
<td>3.96</td>
<td>1.14</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5-Satisfied</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Not motivated:</td>
<td>3.64</td>
<td>1.23</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5-Motivated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-I do not plan ahead:</td>
<td>3.33</td>
<td>1.32</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5-I plan ahead</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-I do not feel like I have control:</td>
<td>4.13</td>
<td>1.09</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5-I feel like I have control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Not thinking about my learning:</td>
<td>4.06</td>
<td>1.01</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5-Thinking about my learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Not successful:</td>
<td>4.11</td>
<td>1.09</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5-Successful</td>
<td></td>
<td></td>
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</tbody>
</table>

Qualitatively, results were examined based on Zimmerman’s three dimensions aligned to each question in the instrument. Figure 3 offers a sample of those findings.

Table 2

SRL Codes Aligned to SRL Questions with Sample Learner Quotes
<table>
<thead>
<tr>
<th>SRL Codes Zimmerman (2008)</th>
<th>Description Item</th>
<th>Aligned to eLss instrument adapted to add a section on SRL</th>
<th>Example quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forethought</td>
<td>Thought given to posts Planning ahead Looking for content to post</td>
<td>Q1 Q2 Q9</td>
<td>“I work at Fairgrounds St. Pete as a creative technologist. We also have a small education component that is starting to pick up. For my final project, I'm thinking of creating a storyline project that teaches learners how to create &quot;Glow Grass&quot;. It will also teach the basics of electricity and electrical circuits.” “Looking forward to the next half and getting deeper into Articulate Storyline”</td>
</tr>
<tr>
<td>Performance Phase</td>
<td>Self-Created Posts Control Motivation</td>
<td>Q3 Q8 Q10 Q11</td>
<td>“Here is what I have accomplished in class today with my storyboard.” “This is my first attempt to make a storyboard” “The course that I've be developing is on the subject of community paramedicine”</td>
</tr>
<tr>
<td>Self-Reflection Phase</td>
<td>Social media reactions Thinking about the learning Feeling Successful Reflective Satisfaction Learning about/from my classmates</td>
<td>Q4 Q5 Q6 Q7 Q10 Q11</td>
<td>“I spent a lot of time choosing music for audio editing, since when these music are added to your project, they must be logical!.” “Although, the word count for making posts was hard to achieve at times, so I relied on commenting on others' posts.” “I think it got a bit off track somewhere along the path. This is partly because I didn't do a storyboard. I felt like the book itself was enough to go on, but it turns out I may have benefited from some production notes” “This is a deliberate move in order to achieve the emotional / psychological impact that I want to achieve.”</td>
</tr>
</tbody>
</table>

**Discussion**
In coupling the qualitative with the quantitative findings, researchers compiled the following lessons learned.

1. A review of the data suggests instructors may enhance learner self-regulation if the instructor reinforces the need to plan ahead, offers specific Yellowdig reminders along with other course assignments, and remind busy learners of the various options in Yellowdig to enhance their learning (such as authoring their own posts that extend the course content).

2. Those who advanced their learning from task-based to self-regulation offered sentiments such as “The format was very modern and fun; the gamification aspect of it made interactions more significant and required more critical thinking than most discussion boards.” These learners reflect upon the peer-to-peer engagement and motivation of the gameful experience, recounting, “I liked how we could engage with other students and get to know each other a lot better with all the interactions.” Another offered, “Easy collaborative efforts, the points earned are rewarding to see and encouraging.” These
students found the discussion board helpful in offering options for them to advance their own learning. Ultimately, these learners make critical connections once they understand their part in the experience with SRL. (See Figure 3.)

**Figure 3**
*Making Critical Connections*

3. Learners need to be redirected to re-envision learning to mimic their everyday world of learning. Rather than wait for the professor to make a prompt at the beginning of the week and wait until the day before it was due to post their response, with a few posts to peers, the faculty redirected learners to engage as they do with other social media. Build the learning daily with a bit of the social media feed. In doing so, learners earned points passively when they prompted others to engage in their ideas, grow their knowledge, and create connections and community. (See Figure 4.)

**Figure 4**
*Reflecting Upon the Learning*
Overall, learners need to be redirected to re-envision learning to mimic their everyday world of learning. Rather than wait for the professor to make a prompt at the beginning of the week and wait until the day before it was due to post their response, with a few posts to peers, the faculty redirected learners to engage as they do with other social media and build the learning daily. In doing so, learners earned points passively when they prompted others to engage in their ideas, grow their knowledge, and create connections and community. This study found the SAGE approach using the Yellowdig platform to improve critical connections when instructors purposefully incorporate this disruptive technology to reinvent the student learning experience offers an effective platform to facilitate self-regulated learning. A further examination from the cognition perspective, examining if they truly achieved learning outcomes, could further advance understanding of this approach.

Conclusion and implication

Initial findings across multiple courses in this study suggest that instructors can leverage the SAGE approach to learning to foster SRL. Overall, this study explores the Yellowdig platform as one interactive solution for instructors to help motivate their learners to address difficult course content and advance problem-solving and critical thinking to better address complex societal issues. This study offers learning considerations for instructional designers, faculty, and supervisors of instruction in higher education. Findings across multiple courses suggest that instructors can leverage the gameful experience and social media-like reactions of community-building platforms to foster engagement, satisfaction, and SRL connections.

Ultimately, this SAGE design transfers the experience to the learners allowing them needed autonomy yet carefully scaffolding their learning and allowing them to slowly become more independent, self-regulated learners. In turn, instructors facilitate the discussion and deepen critical connections instead of counting posts and responses.
Declarations

In compliance with ethical standards at the University, researchers obtained informed consent from all individual participants.

All procedures performed in this study involving human participants followed ethical standards and the 1964 Helsinki declaration and its later amendments.
References


