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One Tool With Multiple Uses: An Innovation Configuration Map of Flip in Education

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ABSTRACT

Flip (formerly Flipgrid) was developed almost 10 years ago as a tool to allow opportunities for engagement and social presence in a virtual learning environment. Recently, we have seen an explosion of Flip's use by PreK-adult educators, and not surprisingly, literature focused on use, frequency, and implementation strategies. What is missing from the literature is a systematic analysis of what Flip integration looks like on a broader scale. Through the development of an innovation configuration map, this study sought to describe the ways in which educators as a group use the educational application, Flip. Results show three configurations of Flip integration. Each configuration has a unique value for teaching and learning. Despite these three unique configurations, there are also uses of Flip that are consistent across all configurations. Understanding the big picture of integration allows for informed decision-making and prepares one for examining the impact of integration. Implications of these findings extend to those planning professional development and administrators wanting to promote ubiquitous uses of technology in schools.

Keywords: innovation configuration map, Flipgrid, technology integration, innovation adoption

INTRODUCTION

The use of technology to promote greater student engagement is well researched (e.g., Bartlett, 2018; Gunuc & Kuzu, 2014). One such tool currently used by educators to promote student engagement is Flip (formerly Flipgrid). Flip was developed in 2012 by University of Minnesota Learning Technologies Professor Charles Miller as a way to promote more student engagement in his hybrid and online classes when he was travelling and not able to hold on-campus courses (Grayson, 2015). What started as a small personal endeavor to provide opportunities for social presence and interaction in an online class quickly grew to being a widely used tool in K12 and higher education learning environments.

Much of the literature on Flip reports on individual classroom use (e.g., Green & Green, 2017; Mango, 2019; Miller et al., 2020; Miskam & Saidalvi, 2019), and student and educator perceptions of Flip use. A recent study we conducted (Green et al., 2021) is an example of this research. We administered an online survey to gather data on individual educators' uses of Flip along with their perceptions about how use impacts student learning. Our research concluded that there is a relationship between teacher perception of the tool and how they use it as a learning tool. We found that Flip is used in a range of ways that are aligned to how its developers intended and in ways that the developers most likely did not imagine the tool being used. Considering this, if we only focus on uses in line with the intended design of Flip or only listen to those with negative perceptions of the tool, we may not pursue adopting the tool for classroom or school use.

What is missing in the literature is a comprehensive description of the range of ways Flip is being used in learning environments that can be used to help educators come to a shared definition of this learning tool, and to make their own judgment of its value. The current study is intended to address this gap in the research. This study sought to systematically describe the ways in which educators as a group use Flip.

In this study we explore and organize into meaningful descriptions various ways Flip is being used in teaching and learning environments. To do this, we developed an innovation configuration (IC) map–a word picture of different operational forms of an innovation (Hall & Hord, 2020, p. 74). An IC map is an acknowledgement that "the innovation in action can take on many different operational forms or configurations" (Hall & Hord, 2020, p. 74). Hall and Hord (2020) suggest that the applications and implications of IC maps extend beyond simply describing the different ways an innovation is being implemented but include providing clarity of expectations between innovation adopters (the teachers) and change agents (those asking the teachers to implement the

innovation), serving as a foundation for planning professional development and coaching, engaging in personal reflection, and program evaluation.

The question that guided this study is: "what are the different ways in which educators as a group use Flip for teaching and learning?"

THEORETICAL FRAMEWORK

This study was conducted through the lens of innovation adoption. This is not a new approach. When we look back on perhaps one of the most influential K12 adoptions of innovations, the Apple Classrooms of Tomorrow, the literature (e.g., Dwyer et al., 1991; Hiebert et al.,1989) first focused on what teachers and students were *doing* with the 1:1 access, and later began to explore *impact* on learning and pedagogy (e.g., Dwyer, 1994).

Hall and Hord's (2020) concerns-based adoption model (CBAM) of change, and in particular the IC map dimension suggests that "development of a promising technology does not guarantee that it will achieve widespread use. Teachers will vary in their interest in adopting a new approach and in their competence to use it" (Hall, 2010a, p. 232). The IC map concept is an acknowledgement that a whole range of configurations can occur in anyone learning environment with added emphasis that configurations are simply different, not better, or worse than each other (Hall & Hord, 2020).

A large body of literature, including our own, has applied the IC map concept when examining educational technology adoption in schools. In addition to our earlier research, (Donovan et al., 2010, 2014), Hall (2010a), in his pivotal manuscript that connects CBAM methodology with technology in schools, cites multiple studies that use IC maps for understanding the complexities under which innovation adoption occurs, and purports that "an IC map presents clear descriptions, component by component, of what use of the innovation can look like. An IC map is useful to the change facilitators, coaches, and principals, who are supposed to know what to look for when they are observing the innovation in use" (p. 242). It is with this understanding that we explore how educators are using Flip in the teaching and learning environment.

LITERATURE REVIEW

When considering literature to inform the development of our IC map we drew on our earlier research (Green et al., 2021) that describes ways and frequencies with which individual educators are using Flip. From our research, we identified that broadly speaking Flip is used for creativity, increasing engagement, promoting higher-order thinking (e.g., exploring topics and giving peer feedback), teacher assessment, and community building. We examined literature on technology integration and these topics. We did not limit ourselves to Flip only literature because the IC map construct goes beyond describing tool use in isolation but looks holistically at the integration process.

Cultivating Creativity Through Technology

Creativity is a key element of developing 21st century learners. Mishra and Henriksen (2018) fully explore the link between technology and creativity, and argue that creativity, like technology, cuts across disciplines. They define creativity as consisting of three components: novel (and purposeful), effective (or valuable), and whole (or complete). The literature represents a shared view of creativity being multifaceted and complex, making it difficult to address. However, pairing technology with creativity is often offered as a potential solution to this complex issue.

Teachers play a pivotal role in using technology for creative purposes. Ertmer et al. (2012) suggests building teacher dispositions in order to take advantage of new technologies, Loveless et al. (2006) stress the importance of teaching strategies to support creative student work, and Henriksen et al. (2016) suggest integrating specific curriculum pairing creativity and technology.

Despite the emphasis on technology facilitating creative practice, Henriksen et al. (2018) have documented how rhetoric doesn't necessarily reflect practice. In their review of various policies related to technology and creativity globally, the authors write, "despite the fact that technology is sometimes positioned as a panacea, it is inherently a tool that is contingent on how it is used. It can be used to maximize affordances for creative output or deep learning, or it can simply be a replacement device with shallow uses for learning" (p. 420). Similarly, implementation is complicated more by the realities of the classroom and common assessment methods (Henriksen et al., 2021).

Student Engagement

As educators, we use the phrase *student engagement* in relation to be learning on a regular basis. But what exactly is student engagement? According to EdGlossary.org (2016), student engagement "refers to the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught" (para. 1). The glossary indicated that there is a consensus in education circles that engagement is directly related to student learning, indicating that increased engagement leads to increased learning. In 2004, McMahon and Portelli (2014) captured definitions of student engagement and the key elements as represented in the literature. They categorized the definitions into traditional, student-oriented, and democratic. Similarly, Edglossary lists multiple dimensions of student engagement: intellectual, behavioral, social, physical, cultural, and emotional. It is clear from their brief overview that student engagement is complex. More specifically, Nayir (2017), in examining the relationship between motivation and engagement, conducted a thorough analysis of student engagement literature and showed an abundance of support for the notion that there are three levels of student engagement–behavioral, emotional, and cognitive. Our own work (Donovan et al., 2010) found this to be true in a 1:1 laptop environment where students were highly engaged on the behavioral level, but minimally engaged on the emotional and cognitive level (when we consider engagement in relation to intended learning outcomes). Further, Baron and Corbin

(2012) argue that inconsistencies between expression and practice have led to disengagement.

Many have explored computer-mediated student engagement. Specifically related to Flip, Mango (2019) reported how students perceived a higher sense of academic engagement through developing their confidence, as well as increasing their social engagement. Similarly, Bartlett (2018) emphasized the importance of society, self, and confidence when engaging in online learning. Through the integration of Flip, engagement proved to increase mutually for students and the instructor alike. Integrating other forms of technology has proven to increase engagement levels as well. Gunuc and Kuzu (2014) note that student engagement increases through use of technology integrated meaningfully within instructional activities.

Promotion Higher-Order Thinking

Dewey (1933) indicated that reflective practice is higher-order thinking, and that reflection is as important as an experience. Johnson and Skarphol (2018) explored the implementation of Flip with secondary students engaging in fine art critique. Students were surveyed on their use of the tool to reflect on their own artwork and on their ability to provide feedback to their peers. Data indicated that students perceived that they were better at critically evaluating their own work and providing feedback to their peers on their artwork. Students reported an increase in communication skills. Similarly, as part of a creative 3D printing project, Dousay and Weible (2019) incorporated student reflection through Flip. Not only did the use of video recording document the elementary students' process as they designed various insects, but the tool aided researchers in data collection and analysis.

Reflective practice in teacher education is essential when it comes to preparing preservice teachers and developing as an in-service teacher (Belvis et al., 2013). Further examining the nuances of reflective practice through Flip, Stoszkowski et al. (2020) examined collaborative reflection on professional practice between groups of student-coaches. Findings resulted in video reflections that were more critical and less descriptive than text-based reflections. However, higher levels of critical reflection were lower.

Facilitating Assessment Through Technology

Using technology to assess student learning is common. Through multiple literature reviews on the potential of technology-enhanced assessment strategies, most often technology is being used as part of formative assessment and to engage in the feedback cycle (Brady et al., 2019; Sweeney et al., 2017). Technology usage has shown to improve efficiency in grading and providing feedback to students (Bennett et al., 2017; Crook et al., 2012).

Using video as an assessment mechanism aids in students participating in the assessment process (Christianson et al., 2009), increases overall student motivation (Tugrul, 2012), and aids in self-assessment and reflection (Barry, 2012). Arsenis et al. (2021) replaced a text-based assignment with a short video assessment. Student perceptions included preference for varied assessment measures and were overall positive despite challenges. Similarly, Murphy and Barry (2016) asked students to video record presentations. Findings showed that the assessment strategy provided substantial learning value, and a subsequent self-reflection provided opportunities for deep learning and impacting future practice.

Not all tools are being used for all levels of technology-based assessment. In their meta-analysis of technology-enhanced assessment strategies, Sweeney et al. (2017) noted that 47% of articles reviewed classify technology usage as modification or redefinition according to the SAMR model. For example, Drinkwater et al. (2014) reported using a flipped instructional model to support in-class discussion. Specifically, they used technology to facilitate formative assessment and feedback to promote active learning.

Community Building Using Digital Tools

Establishing a sense of community to frame the meaningful use of technology has become an essential element of technology integration. Researchers have identified various strategies to aid in developing a sense of community. Specifically using instructional approaches containing video has been associated with a greater sense of student connectedness (Berry, 2019). To that end, using video to facilitate teacher presence has been shown to increase retention, perceived inclusive course design, and overall student engagement (Stone & Springer, 2019). One strategy much established in the literature is using introductions to build a sense of community. When adding a video component to these 'get-to-know-you' activities, students perceive a strong sense of social interaction with their instructor aiding in building relationships (Martin et al., 2018). Additionally, student perceptions are overall positive (Kiles et al., 2020; Lowenthal & Moore, 2020), and enhance interaction (Ostashewski, 2020). Specifically, integrating the use of Flip enhances the student-instructor connection (Delmas & Moore, 2019; Fahey et al., 2019).

METHODS

We used the IC map dimension of CBAM to guide the methodology of this study. We specifically chose an IC map as it will allow us to comprehensively and strategically represent the different ways educators as a group are using Flip (the innovation) in the teaching and learning environment.

Development of an IC map is a multistep process:

1. compiling information (learning about the innovation),
2. identification of components and variations (making sense of interviews, observations, and documents related to the innovation), and
3. drafting the IC map (writing descriptions, verifying descriptions through interviews and observations).

Once we have an IC map, we can then clearly and systematically describe the different configurations of use.

Participants

This study used convenience sampling to invite participants. Using three social media platforms (Twitter, Instagram, and Facebook) we invited potential participants to complete a survey about their use of Flip. First, we used Twitter

and Instagram to invite our professional account's followers to be study participants. We also utilized two Facebook professional learning communities that are dedicated to Flip as a vehicle to invite potential participants to complete the survey.

Survey completers (n=230) were educators with a range of teaching experience, a range of teaching environments, and a range of experience using Flip. We do not have any information about the state or country of residence of survey completers.

IC Map Development Phase One: Compiling Information

This phase of IC map development involves IC map developers gaining familiarity with the innovation and compiling information by collecting and analyzing data to create a cluster map. As users of Flip, we have extensive familiarity with the innovation. Due to the nature of this study being a very large sample size, our experience as users of Flip, and educational practices primarily being remote during the COVID-19 pandemic, in lieu of observations, we used a survey that asked educators to describe their uses of Flip. Additionally, we examined the Flip website community for the most used topics (conversation prompts or questions).

Although there are over 33,000 topics that have been shared in the Flip website community, we focused on the topics that had been adopted for use by other educators in the Flip community the most. These uses by other educators ranged from 21,000 down to 7,800. We stopped at this point because the next most common use was only 5,000 adoptions. These nine topics were shared by educators, Flip employees, and an educational website.

IC Map Development Phase Two: Identification of Components and Variations

In the IC map development process, phase two is for analyzing data and creating a cluster map. Key terms used for phase two include components (behaviors or uses related to the innovation), variations (different ways a component can be operationalized), clusters (groups of components), and dimensions (levels/frequencies of variations).

To identify components, we drew on our own experience as users and our earlier research (Green et al., 2021) that identified categories of use of Flip. We used Nvivo software for our initial coding of data to determine if these categories from our earlier study were also valid as components for an IC map.

We began by coding the responses to the question asking perceived benefits of Flip and a second question asking participants to describe a lesson in which they integrated Flip into the six categories (creativity, discussion, engagement, explore topics, feedback, and reflection) from our earlier study. When looking at the data, it became quickly apparent that reflection was not a valid component; however, student voice was a recurring theme. As a result, we did not continue with the component of reflection. Our final components were *creativity, discussion, engagement, exploring topics, feedback, and student voice.*

Within these final components, we had several second-level components for discussions (academic/non-academic), engagement (student/student or student/teacher), exploring topics (individually or collaboratively), and feedback (student/student, teacher/student, and assessment). We distinguished discussion from engagement based on content and directions for the topic. For example, engagement activities include ones in which students shared an original idea or work sample and responded to each other. Discussion on the other hand, was used to code activities in which the teacher provided the content and students were to discuss it. This is not dissimilar to a threaded discussion on a learning management system. More specifically, academic discussions are ones in which students discuss content related to an academic learning unit. Non-academic discussion (which we re-named community building due to the nature of the responses) explicitly connected Flip use to social emotional learning (SEL), getting to know each other, and staying connected during virtual instruction.

To illustrate how we coded specific responses, **Table 1** shows some (but not all) examples of variations (e.g., different ways a component can be operationalized) that were identified for each component (behaviors or uses related to the innovation). Flip discovery community responses are indicated in the table with *. As a reminder, some of the responses were dual coded. Although we only use them as an example for one code in **Table 1**, we have indicated if they were dual coded with **.

Next, we created a cluster map of components. According to Hall (2010b), cluster maps are "a mind map or overall schema that represents the many possible Components and Variations as well as their interrelationships" (p. 4). We used Spradley's (1980) domain analysis process to identify three clusters (groups of components)–teacher uses, student uses, and intended outcomes/purpose. We once again examined our coded data to specifically look for teachers, students and intended outcomes within each component. For example, the cluster of intended outcomes included variations (different ways a component can be operationalized) from engagement, student voice, and explore topics; the cluster of teacher uses included variations predominantly from the feedback and discussion components; and the cluster of student uses drew primarily from creativity, discussions, feedback, engagement, explore topics and student voice.

IC Map Development Phase Three: Drafting the IC Map

Phase three is a cyclical phase. We began with developing the first draft of the IC map by writing descriptive dimensions (levels/frequencies of variations) of each variation (different ways a component can be operationalized). Next, we verified the first draft of the IC map, revised the IC map, and finally we sent the revised IC map to participants to identify, which dimension they felt best represented what we might see if we visited their classroom. As a reminder, for an in-person innovation and a smaller sample size, the verification of the first draft would be completed via focused observations and informal interviews.

The first draft of the IC map development involves writing dimensions (levels/frequencies of variations) of each variation (different ways a component can be operationalized). The following is an example of one variation with dimensions from the teacher use cluster of our IC map first draft:

Table 1. Components and example of variations

Component	Examples of variations	SL component	Examples of variations
Creativity	Creativity. I love how they manipulate the camera & use filters in their work.	Presentation	**Excellent student presentations & peer critiques–best in my career.
Discussion	**Cathedral design presentation for my church history classes. Students presented their designs of cathedrals on a set of criteria via Flipgrid.	Academic	**Book talks–students share a brief summary & review of their independent reading book & classmates reply to the three books they are most interested in reading.
		Community building	Shout-outs to teachers & friends. Thankful & grateful responses. During remote learning, it has kept us together.
Engagement	Students who do not usually participate will create Flipgrid videos.	Student/student	I love when students respond to each other & demonstrate strong listening & engagement.
Explore topics	Scavenger hunts & skip counting videos	Collaboratively	Connecting with other students globally to share languages & cultures.
Feedback	Student led conferences	Student/student	They have pride in their work & look forward to feedback from their peers!
		Assessment	I also like it for formative assessments in moderated mode. The individual feedback option is awesome as well.
Student voice	The most important positive outcome of my students' use of Flipgrid is giving the more reluctant learners a platform to feel comfortable expressing themselves.		

I use Flipgrid for giving student feedback (select all that apply):

1. On a regular basis, but it depends on the lesson
2. As one of my main tools for **formative** feedback
3. As one of my main tools for **summative** feedback
4. For **both formative and summative** feedback
5. I do not use Flipgrid for giving student feedback

Our first draft had a total of 19 variations (question prompts) across the three clusters (teacher uses, student uses, intended outcome/purpose).

To verify the *initial IC map*, we emailed six participants who had agreed to be contacted for follow up. We selected these participants based on their Flip experience (4.5+ years). Two participants were high school educators, one middle school educator, one K12 instructional coach, and two elementary educators. We selected more experienced users as we felt they would more likely be able to answer all questions with fewer 'I do not do this' type of responses. Three of the invited feedback participants gave us feedback. One was a K12 instructional coach who works with K12 teachers and students, another was an elementary teacher, and the third was a high school teacher.

Changes that we made based on feedback included adding an option/dimension of *other* with a space to write an open-ended response to each question, adding question prompts/variations about moderating student responses, expectations for student posts and responses, and reusing academic and non-academic topics. Additionally, we reworded some variations and added additional dimensions to provide more choice.

Normally, verifying the *final IC map* would involve more focused observations and discussions with participants. For our unique circumstances, we completed this step by emailing all participants (n=79) who agreed to be contacted for follow-up, requesting they complete the second survey/IC map (**Appendix A**) asking them to select the dimension(s) (options) that best represent their use of Flip. After one week, 34 participants completed the survey. This data became our final IC map draft.

Configurations of Flip Integration

To write our configurations of Flip integration, we looked first by grade level area. All grade levels (early childhood, elementary, middle/junior high, high, and adults) had the full range of responses for the different variations. Next, we looked at the response to use of Flip before and during the shift to remote teaching and learning. With this it became evident that there were differences in teacher and student uses of Flip between newer users (had not used Flip prior to March 2020), those using Flip more frequently during remote teaching, and those whose use did not change a lot when during the shift to remote teaching. For example, many teachers who were new to Flip after March 2020 or who used Flip more during remote teaching and learning than before March 2020 also indicated that they did not engage with student videos or view all videos, did not grade or rarely graded student contributions, and when they did it was a +/- approach. Similarly, when we looked across teachers who have been more consistent users of Flip and whose use did not change much since the shift to remote teaching, we saw similar trends of being more purposeful and systematic in their use of Flip. For these educators, responses for grading Flip contributions, introducing Flip tasks and using Flip as a tool for summative and formative feedback more often indicated 'it depends on the topic/assignment'.

RESULTS

We identified three unique configurations of Flip used by participants in this study. Hall and Hord (2020) remind us that configurations are word pictures of the different ways an innovation is being used. There is no hierarchy. All three are purposeful and have different activities and benefits to the students and the teachers.

Configuration 1

In this configuration, Flip is most often used in non-academic ways such as social emotional check-ins, morale boosting (e.g., thank you messages and positive affirmations), student introductions, and schoolwide or grade level speeches (e.g., student council).

Table 2. Configurations of the use of Flip

Configuration 1	Configuration 2	Configuration 3
Primary purpose community building	Academic & non-academic	Mostly academic, specifically for assessment
Mostly non-academic	Moderated posts	Moderated posts
No teacher presence	Limited teacher presence	High teacher presence
Moderated posts	Use of stickers	Use of stickers
Use of stickers	Open ended options for interaction/responses	Purposeful prompts
Responses not required	Occasional conclusion or wrap up	Required & structured interaction/responses
No feedback	Occasional grading (cr/no cr)	Integral to learning unit & assessment
No wrap up or conclusion		Graded posts & responses using rubrics in Flip
No grading		Explicit closure & summary

There is little interaction with others, other than to observe or react with a sticker (thumb up, heart, flames, etc.). There is clear intent for how Flip is being used, and the benefits are highly valuable. One such benefit is the quality of video contributions being considered more thoughtful than a synchronous discussion or live presentation. Directions are clearly stated but also open-ended so individual postings can be meaningful and allow for creativity. Creativity is promoted through the permitted use of filters and stickers. Videos are more often than not moderated by the teacher or facilitator. Feedback is not needed and therefore not given. The purpose of the topics also dictates that there is limited need for summary of videos or highlighting individual videos. Similarly, there is no need for assessment or grading of contributions.

Configuration 2

In this configuration Flip is being used in both academic and non-academic ways. There are expectations for interaction by way of posting responses to other learners; however, learners have not developed patterns for who they respond to. Students are occasionally provided with talking points to guide their peer response, but more often they can choose how to respond. Some parameters or boundaries are set for how to post and respond, and facilitators keep an eye on all posts but do not necessarily interact with each one by viewing it or responding with feedback. Videos are moderated to ensure safe and ethical uses of the tool. Directions are posted in Flip and occasionally presented in other forms such as in the learning management system or verbally during synchronous instruction. Students have opportunities for creativity through stickers and reactions.

At the conclusion of the topic, sometimes there is a wrap up and closure, while other times everyone just moves on to the next activity or task. There is minimal consistency in grading of learner contributions, with some teachers assigning credit/no credit, others not grading at all, and others using their own grading system. This is dependent on the topic and content area for which topics are assigned. During the shift to remote teaching and learning, Flip was a virtual life ring.

Configuration 3

In this configuration, Flip integration is planned, purposeful, and represents a more ubiquitous use of Flip for teaching and learning. The use of Flip is highly intentional, often as a tool for formative or summative feedback. Participant videos exhibit higher-order thinking that one would not see in a synchronous class discussion. Teachers or facilitators using Flip are fully engaged in the topics and view initial videos and responses, and with K12 learners' videos are moderated prior to being made public for other viewers.

Additionally, teachers or facilitators in this configuration meaningfully summarize the conversation and highlight key points and videos. This wrap up is done with consistency, and like the use of Flip, it is integral to the lesson. Clear directions and introductions add context for the students. In this configuration, teachers are purposeful in how they grade contributions. They often create rubrics within Flip to evaluate video contributions. Student creativity is integral to the design of the learning experience in that Flip was the selected tool because it allows for individuality. Creativity in the content of contributions is enhanced using stickers on videos and selfies.

DISCUSSION

We identified three configurations of Flip use in teaching and learning environments. Each configuration draws from the identified clusters of student uses, teacher uses, and purposes for choosing Flip as a tool for teaching and learning that we observed in the data. **Table 2** shows the variations across all three configurations.

As we developed our configurations, it became clear that although we had three unique configurations, there were consistencies among the three. We found that Flip allowed for creativity using stickers and reactions in all three configurations. In nearly all instances, videos were moderated by the teacher indicating the importance of safe and ethical uses of technology. It was also clear across all three configurations that the quality of learner contributions was higher than during an in-person discussion or presentation. This third point does not surprise us.

There is research (e.g., Aloni & Harrington, 2018; Lowenthal et al., 2020) that suggests when discussions occur asynchronously, learners have time to compose their contributions, do not feel pressure to speak on the spot, and they feel more connected to and engaged in the instructional ecosystem. Most importantly with the configurations we identified, the three configurations represent that Flip is a versatile and valuable teaching tool that is being used in ways that are unique and purposeful. We close this paper with considering what we believe to be the relevance of this study for educators and school leaders who are using Flip.

Three Configurations: All Have Value

We believe that the major takeaway from this study is that although all three configurations highlight different ways Flip

is being used for teaching and learning, we do not find one to be most valuable or useful. They are equally useful and have their purpose. We consider configuration 1 as equally powerful as configuration 3, and both are potentially more sustainable than configuration 2; however, all three configurations have their value and purpose. Within configuration 1, the purposeful use of Flip for SEL check-ins and school wide practices, although not highly engaging/interactive, allowed educators to stay connected to learners and the learners to stay connected to each other and feel valued. In configuration 1, the use of Flip provided opportunities for up close connections to the learners. Flip in configuration 1 also allowed for convenience of presentations to large groups that would otherwise be difficult to manage and coordinate. The use was clearly connected to the purpose. This contrasts with configuration 2, in which student use of Flip was predominantly a fun or potentially engaging substitution for an in-class activity.

In configuration 2, the purpose for using Flip was not clearly defined other than it was a tool to engage students. This proved very valuable during emergency remote teaching when teachers were doing everything, they could motivate students. However, because it can lack direction and purpose, it is potentially less valuable for learning in the long term when students and teachers are in the classroom. By not having clear expectations for interaction, not using contributions for formative or summative feedback, uses of Flip in configuration 2 can just as easily be accomplished in other ways.

Flip use in configuration 3, as in configuration 1 is purposeful with a clear intention that adds value. Different to configuration 1, in configuration 3, Flip use is predominantly academic and is integral to the learning unit. A certain level of expertise and training is required for Flip in this configuration. With careful planning and support Flip adds value to the learning experience and the teacher can more clearly see the learning occurring.

This idea takes us back to the introduction in which we warn that we should not make judgements about technology integration without fully examining the way it is being used. If we consider the importance of academics and the three unique configurations, it may seem that configurations 1 and 2 are less advanced and less important than configuration 3. Yet, when we considered the clusters of components that made up the configurations, we were able to see that configurations 1 and 2 in fact include highly valuable practices that should be promoted just as much as configuration 3 uses.

Innovation Configurations and SAMR

We understand that to some, there are similarities between innovation configurations and Puentedura's 2010 SAMR model, which is widely used in K12 to help educators visualize different levels of technology integration. It is important to note, however, that there are several distinctions between innovation configurations and the ways in which classroom technology integration is represented by SAMR. The most distinguishing factor is that innovation configurations are unique and do not represent a continuum; whereas SAMR highlights different degrees to which technology is being implemented and implies that one should strive to move along the continuum from substitution and augmentation to eventually reach modification and redefinition. The nature of the SAMR model implies that modification and redefinition are often described as more sophisticated or transformative and are superior to substitution and augmentation. Although it is important to consider how and when technology is being used, it is highly important to consider the purpose and the context. Our configurations highlight what we know from change theory, that we must always consider use before making judgements of value. For the educators in this study, there are different reasons to integrate Flip (and other technologies). Context and purpose are influencing factors.

An additional and very important distinction between innovation configurations and SAMR is that IC maps are data driven. The levels of the SAMR model are not. Within the research structure of IC maps are specific clusters (teachers, students, and purpose in this study), all of which are integral to each configuration and have been developed from the data. The levels of the SAMR model primarily considers student learning activities without using data to determine how technology is truly being integrated.

CONCLUSION

Through procedural data collection and analysis, this study was able to highlight that Flip is used in different ways. Although we feel that configurations 1 and 3 are potentially more valuable in the long term, than configuration 2, we do not discount the value of the configuration 2, especially during the shift to virtual teaching and learning that occurred in March of 2020 and for teachers who are hesitant to try different technology in their classroom. Configuration 2 represented a highly valuable use of Flip at a time when teachers were suddenly thrown into a different teaching environment. Professional developers and administrators can use this knowledge to ensure support of all users at their level without adding undue pressure to use Flip in different ways. For sustained technology integration, we suggest that professional developers help teachers connect tool selection to a clear purpose, as we found occurred in the configurations 1 and 3. Doing so will promote more continuous practices as well as more ubiquitous technology integration. For administrators, we recommend keeping an open mind and not comparing educators to each other. For configuration 2, Flip was a virtual life-ring, and these teachers need to be commended for using available resources and learning new tools with limited training. Given that these teachers were willing to take risks and try a new pedagogical approach, we consider this to be an indication that these teachers will be open to on-going professional development to explore different uses of Flip such as for feedback and assessment.

We understand that all research has limitations. This study is no exception. In this study, we applied the IC map construct but did not stay true to the data collection strategies of observations and interviews. Instead, we used survey data that relied on self-reported uses of Flip. This could be considered a limitation; however, we feel it potentially adds value because it allowed us to reach a larger participant pool and to collect data representing a greater range of uses. Another potentially limiting factor of our study is that it was conducted at the end

of a global pandemic and many educators were doing everything they could to stay afloat and may not have had adequate training or time to fully explore the potential of Flip. Although we see how this can be described as a limitation, at the same time we feel it added value to our findings as all educators do not start using a tool at the same time and within one school, there are different levels of tenure and interest in technology use.

As we reflect on the IC map development process and the evidence that the three configurations were of different uses of Flip, we observed that they all represented safe and ethical practices, produced thoughtful student contributions, and promoted creativity in students. We can firmly conclude that Flip is highly valuable no matter how it is being used. Finally, we feel that this study confirmed the need to make sure we are open-minded in how we view teacher use of tools for teaching and learning, and that we not discount uses that initially may appear simple. Because despite the relative simplicity of the use of a tool, the way a tool is being used may be highly purposeful and fit the context in which it is being used.

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APPENDIX A - IC MAP FOLLOW UP SURVEY

Innovation Configuration Map for Flip

A few months ago, you completed a survey about your use and perception of Flipgrid as a tool for teaching and learning. At that time, you indicated you would be willing to be contacted for 'follow up'.

This survey is a second level survey in lieu of an interview.

The survey asks you some more specific questions about how you plan for Flipgrid integration, as well as how you use Flipgrid in specific ways. The survey questions were developed following a first round of data analysis from the initial survey you completed.

The survey is in three parts.

1. The first part asks about your instructional decisions and patterns for integrating Flipgrid.
2. The second is specific to how you have students work in Flipgrid.
3. The third asks about reasons you or your school adopt Flipgrid over other pedagogical and communication tools.

We thank you in advance and feel free to contact us if you have any questions or would like to add anything.
Authors and emails

Please indicate the grade level(s) you teach

- Early childhood
- Elementary
- Middle/junior high
- High
- Adults

Please indicate the content area 'groups' you teach

- Multiple subjects/K6
- Arts
- Sciences
- Humanities/social sciences
- Physical education/coaching/home economics
- I am a TOSA/instructional coach
- I am a school counselor or administrator

The following set of questions are asking about your instructional planning and implementation trends when using Flipgrid.

How did your use of Flipgrid change because of the shift to virtual teaching?

- Not at all
- A little
- A moderate amount
- A lot
- I did not use Flipgrid prior to the shift to virtual teaching
- Other

I use Flipgrid for giving student feedback (select all that apply)

- On a regular basis, but it depends on the lesson
- As one of my main tools for formative feedback
- As one of my main tools for summative feedback
- For both formative and summative feedback
- I do not use Flipgrid for any type of feedback
- Other

I use(d) Flipgrid for student discussions of academic content (e.g., discussing math, literature, science, etc.)

- More during emergency remote teaching (since March 2020) than when doing in-person teaching
- Less during emergency remote teaching (since March 2020) than when doing in-person teaching
- About the same during emergency remote teaching (since March 2020) than when doing in-person teaching
- I did not use Flipgrid prior to emergency remote teaching (March 2020)
- Other

I use(d) Flipgrid for non-academic student discussions (e.g., SEL check ins, community building, ice breakers, etc.)
- More during emergency remote teaching (since March 2020) than when doing in-person teaching
- Less during emergency remote teaching (since March 2020) than when doing in-person teaching
- About the same during emergency remote teaching (since March 2020) than when doing in-person teaching
- I did not use Flipgrid prior to emergency remote teaching (March 2020)
- Other

Which of these statements best describes how you grade student Flipgrid contributions? (Check all that apply)
- I do not grade student Flipgrid contributions
- I use the Flipgrid custom feedback option/ rubric that considers quality of content
- I use the Flipgrid basic feedback option/mostly just participation based
- After viewing videos, I use a personal grading tool/platform/system
- It depends on the grid topic
- Other

To what extent do you 'grade' student Flipgrid videos?
- I do not grade Flipgrid videos
- I only grade the ones that are major assignments (e.g., book reports, labs)
- I add +/- to my grade book indicating if a student completed the task or not
- I only assign a score for all initial videos
- I assign a score for all initial videos and responses
- Other

For which content area(s) or learning units do you find you mostly use Flipgrid?

To what extent do you reuse/recycle academic Flipgrid topics (i.e., use the same prompt each year)?
- I have never reused an academic topic from year to year
- I do this for over half of the academic topics I use with students
- I do this for less than half of the academic topics I use with students
- I do this for about half of the academic topics I use with students
- Other

To what extent do you reuse/recycle non-academic Flipgrid topics (i.e., use the same prompt each year)?
- I have never reused a non-academic topic from year to year
- I do this for over half of the non-academic topics I use with students
- I do this for less than half of the non-academic topics I use with students
- I do this for about half of the academic topics I use with students
- Other

Do you consider the quality of student Flipgrid contributions for academic topics to be
- More thoughtful than in person discussion?
- Less thoughtful than in person discussion?
- About the same as in person discussion?
- Other

When introducing a topic on Flipgrid,
- I only use the Flipgrid features (record video/text) for giving directions/expectations for completion
- I introduce/give directions/expectations for completion of the topic independently (e.g., in person, in the LMS, …) of the Flipgrid features
- I use Flipgrid features and introduce topic directions/expectations for completion 'in class'
- Other

When creating a topic in Flipgrid, I use the moderate feature
- Every time
- Some of the time
- Never
- Always with students but not with adults
- Other

When creating a topic in Flipgrid, I most often limit video recording to
- <60 seconds
- 60-90 seconds
- 91-180 seconds
- no time limit (other than the 10 minute one imposed by Flipgrid)
- Other

To what extent do you honestly view all student videos?
- I view every video and every response
- I view most videos and responses
- I view most main videos but only some responses
- I view all main videos but only some responses
- I view all main videos but no responses
- I randomly view a few videos
- Other

After assigning a Flipgrid task/discussion, what type of follow up do you do? (Check any that apply)
- I do not do any follow up
- I summarize the overall conversation in the next lesson
- I highlight a few student's videos when summarizing
- Other

This section of the survey asks about how you design student learning experiences using Flipgrid.

My students have choice in how many peers' Flipgrid videos they respond to
- Always
- Never
- Sometimes
- Depends on the topic
- Other

Which of these statements represents your observations of who students respond to in Flipgrid when they are not assigned someone to respond to?
- They mostly respond to their friends
- They mostly respond to videos shared right before theirs
- There does not seem to be any pattern in how they respond
- My students do not have a choice in who they can respond to
- Other

Which of these statements represents your observations of how students create their videos in Flipgrid (when directions do not give specific steps)? Select all that apply.
- They add 'stickers' to their initial videos
- They add stickers to their selfie
- They use reaction buttons when viewing peers responses (thumbs up,…)
- They type their response to peers more than they record a video response
- Other

When students create Flipgrid videos, they
- Are required to use a script
- Are not required to use a script, but many do
- Mostly record without a script
- Have got better over time so I let them
- Other

When students post responses to peer's videos, they
- Are required to address certain things (i.e., I gave them the talking points)
- Are not required to address certain things but can respond how they choose
- It depends on the Topic
- Other

Which of these describes your expectations for student video responses?
- Students can respond to any main videos they choose
- I assign them who to respond to
- Students can choose but they must respond to a video that does not have any responses yet
- Other

This final section of the survey asks about the decision-making process for choosing Flipgrid for communication and pedagogical practices over other options.

My school (or I) use Flipgrid (check all that apply) for:
- Non-curricular outcomes (e.g., yearbook, student council elections, SEL check ins, awards, etc.). Please provide an example.
- Class assignments (e.g., literature circles, student presentations, etc.)
- Cross-grade level/class period collaboration (e.g., reading buddies in a different grade)
- Interdisciplinary connections
- Interaction with students from other schools/countries
- Parent communication
- Faculty community building or collaboration
- Open forum/general questions
- Other

Which of the following (check all that apply) are reasons you choose to use Flipgrid with students over other methods?
- As an alternative way for students to show learning
- To promote speaking for ELs or shy students
- To ensure all students can have a voice (not just the few who get called on to answer)
- To save time for a class set of student presentations
- To give students a creative outlet
- To actually ‘see’ my students during remote learning
- To promote quality peer feedback
- To document student video journaling
- Student ‘rough draft’ of presentation
- To make learning more engaging for students
- Other