Kahoot! in the History Classroom: An Exploration of the Value of Gamified Quizzes

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INTRODUCTION

For the past 10 years, I have been fortunate to teach curricula in England, Malaysia, and most recently, in Canada at the University of Toronto Schools (UTS). UTS is a Grade 7–12 preparatory school for high-achieving students that offers an accelerated Ontario curriculum comprised of enriched learning expectations. Since the outset of my career, I have been experimenting with a multitude of edutech tools, with varying degrees of success. No matter the country or curriculum, there always seems to be excitement on the part of students when learning with technological tools. In recent years, there has been a proliferation across curricula in the use of gamified quizzes to engage students, provide immediate feedback, and support student learning. Simply put, gamified quizzes integrate game mechanics (e.g., scores/levels, time pressure, feedback loops) into the process of learning. Several platforms facilitate the gamification of quizzes, including Quizlet, Socrative, and Poll Everywhere, to name a few. In particular, I have noticed heightened and sustained student enthusiasm when employing Kahoot!, a tool used to gamify quizzes in the history classroom. Students routinely ask if we are doing a Kahoot! and often ask to be assessed using the tool. This perceived interest on the part of students motivated me to investigate Kahoot! in an attempt to measure and assess the tool’s usefulness for improving student learning and overall wellness in Grade 8 history classrooms of high-achieving students at UTS.
PURPOSE OF THE RESEARCH

Kahoot! was developed at the Norwegian University of Science and Technology (NTNU) and is funded in part by grants from the Norwegian Research Council. Founders Morten Versvik and Professor Alf Inge Wang assert that it will always be free for users (https://kahoot.com/). With so many new educational technologies flooding the market, the free cost coupled with its popularity with students make Kahoot! a natural choice when selecting from plentiful gamified quiz options. Plump and LaRosa (2017) note that Kahoot! has gained wide acceptance globally, with more than 30 million users worldwide; however, despite its growing popularity, there is a dearth of academic literature on the use of Kahoot! in history classrooms. It is apparent in my classroom experiences that a majority of high-achieving learners at UTS are excited about learning with Kahoot! However, I was curious to know to what extent Kahoot! was substantively impacting student experience. I was also curious about the few atypical students who seemed less enthusiastic about being assessed using the tool. Through exploring these issues, I hoped to get a clearer picture of the actual value of using Kahoot! with respect to its impact on the classroom environment.

The results of this research may inform my future use of Kahoot! in the classroom, as well as that of my teaching colleagues. I endeavoured to render student data that would help to answer some of the following questions:
- To what extent are Kahoot! options suitable for assessing high-achieving history students?
- What features of Kahoot! appeal to students?
- Do student survey responses warrant further differentiated approaches to assessment?
- Do the assessment data rendered from Kahoot! provide an accurate picture of student learning?

This study seeks to answer these questions in a bid to enhance the pedagogical foundations upon which Kahoot! is designed and employed in teaching and learning environments.

Furthermore, the future use of gamified quizzes as a mainstay in education is somewhat uncertain. A survey conducted by the Pew Research Center found that 53% of educators believed that gamification would be widespread by 2020, whereas 42% predicted that gamification would not evolve and become a larger trend (Zarzycka-Piskorz, 2016). Contrastingly, Mind Commerce, a research provider, projects that gamification in e-learning will grow to reach $319 billion by the year 2020, and college education and massive open online courses (MOOCs) will hold 69% of the market share (Zarzycka-Piskorz, 2016). The results of this research may contribute to a broader understanding of the usefulness of gamified educational technologies for teaching and learning in the future.

LITERATURE REVIEW

Educational researchers have begun to distill and articulate some of the positive impact that gamified quizzes can have on teaching and learning. Plump and LaRosa (2017) note that student experiences using Kahoot! in graduate and undergraduate classrooms are overall positive and indicate that students
welcome its use as a teaching and learning tool. Indeed, there is a general consensus that gamified quizzes can be highly engaging for students, and provide opportunities for immediate teacher-to-student feedback (Cheong, Cheong, & Filippou, 2013).

Furthermore, in 2013 Dominguez et al. explored the practical implications and outcomes of gamifying learning experiences. Their qualitative data support the idea that gamification can have a positive social and emotional impact on students as well as a potential to increase motivation. However, their quantitative analysis suggests that “students who followed traditional exercises performed similarly in overall score to those who followed gamified exercises” (p. 391). They articulate that more rigorous evidence needs to be collected to measure real impact on student learning.

Similarly, Siegle (2015) asserts that games such as Kahoot! “can increase motivation by fostering a growth mindset in cultivating a persistent, optimistic motivational style of learning” (p. 193). He also notes that, typically, learning involves three separate processes: instruction, practice, and assessment. He contends that games like Kahoot! allow for all of these processes to occur under conditions familiar to the current generation of students. Siegle ultimately deems gaming a viable option for educators to provide differentiated learning experiences that can help gifted students reach their potential.

In terms of supporting student wellness, Wang (2015) found that Kahoot! can provide an outlet for students who are typically shy and quiet. Though these students are not active in the classroom in the traditional sense, Wang found that Kahoot! managed to boost students’ engagement, motivation, and learning after using it repeatedly for five months. The core factor to keep the students’ attention after repeated usage was found to be the competitive nature of Kahoot!. The competitiveness fostered by Kahoot! is another aspect that will be examined in this research paper.

Lastly, Wang and Lieberoth (2016) explored the effect of awarded points and the audio functions of Kahoot! on student concentration, engagement, enjoyment, and motivation. Their research revealed that the audio affected classroom dynamics in a significantly positive way and that awarding points improved learning to a more limited extent.

As the literature suggests, Kahoot! can undoubtedly have a positive impact on student engagement, motivation, and participation in the teaching and learning process. However, the usefulness of Kahoot! in improving student learning and wellness in a history classroom of high-achieving students requires further investigation and analysis.

**METHODOLOGY**

To gather research data on Kahoot!, I initially developed an online survey (using SurveyMonkey) that rendered both qualitative and quantitative data. I successfully surveyed 49 Grade 8 history students, split between two class sections. Respondents were 54% female, 44% male, and 2% identified as non-binary. It should be noted that every student surveyed has an average level of achievement well above the Ontario
provincial standard in Grade 8 history (equivalent to a mark of 75%). Thus, the demographic surveyed comprised of high-achieving students. The survey posed questions that centred around three main themes associated with playing Kahoot!: level of enjoyment, competitiveness, and perceived impact on learning. To conclude the survey, students were also asked to vote on a preferred method for taking formative quizzes in the history classroom, pitting a traditional multiple-choice quiz against a Kahoot! quiz.

I also wanted to seek clarity on the issue of stress associated with the competitiveness of playing Kahoot! in order to ascertain the tool’s impact on promoting student wellness. My survey results could not differentiate between students who viewed stress as a positive motivator and those who saw it as an inhibitor to learning. To generate data on student perspectives of stress and competitiveness associated with playing Kahoot!, I recorded a class discussion centred on the issue and also took a vote on the two types of stress experienced by students (positive vs. negative stress).

Lastly, several UTS teachers use Kahoot! as a teaching tool, and I wanted to get an insight into their teaching and learning experiences. As such, I conducted five informal interviews with colleagues from multiple disciplines at UTS to learn about their experiences using Kahoot! in the classroom. These interviews rendered very interesting qualitative data that complemented and supported my research findings.

RESEARCH FINDINGS

Finding #1: High-Achieving Students Enjoy Learning With Kahoot!

The data rendered from students pertaining to player enjoyment using Kahoot! as a learning tool were overwhelmingly clear: a large majority of students “love” playing the gamified quiz. Figure 1 shows that 61% of students “love” playing Kahoot!, 27% “really like it,” and the remaining 12% either “like it” or describe it as “OK.” No students indicate that they “dislike” playing Kahoot!. These data verify that high-achieving students enjoy learning with it and, moreover, confirm that no students “dislike” the edutech tool. It is rare to find a teaching tool that can uniformly be applied to two full classes of learners without any dissenting voices. Furthermore, these results provide confirmatory evidence for the claims made in the aforementioned research that Kahoot! is indeed an enjoyable gamified quiz option that can be used to engage learners, including, in this case, high-achieving learners in a Grade 8 history classroom. Lastly, on the basis of this evidence, it can be generalized beyond the data that Kahoot! promotes wellness in the classroom, as students enjoy learning with the tool. Figure 2 reinforces this finding, as 94% of students prefer to be assessed using Kahoot! than using a traditional multiple-choice history quiz. The particulars of how Kahoot! promotes student wellness will be examined later in this paper.
Figure 1. To what extent do you enjoy playing Kahoot! in the history classroom?

Figure 2. Do you prefer traditional multiple-choice quizzes (MCQ) or Kahoot! quizzes?

Figure 3: What feature do you most enjoy about learning with Kahoot!?
Finding #2: A Range of Kahoot! Features Appeal to High-Achieving Students

As Figure 3 shows, there are several game-like features that make Kahoot! an engaging learning tool.

When examining the most enjoyable features of Kahoot!, I included immediate feedback and hot streak as options in an attempt to see what percentage of students valued learning as part of the enjoyment of playing the gamified quiz. Immediate feedback is provided to students after each question is administered to clarify the accuracy of the answer, and the hot streak feature motivates students by giving them positive encouragement (i.e., feedback) if they correctly answer consecutive questions. Interestingly, immediate feedback garnered the lowest score on the spectrum of enjoyable features, with hot streak also yielding a small amount of responses. These data seem to suggest that only 15% of students enjoy Kahoot! primarily for the learning experience when juxtaposed against other options, such as the competitiveness elicited by the game.

When playing Kahoot!, a competition leaderboard showing the top 5-point earners is displayed after each question, thus fostering a competitiveness within the class. This competitive aspect brought forth by gamified learning dominated the enjoyable features, followed by the informal nature of the quiz, as demonstrated in Figure 3. The data appear to suggest that students predominantly enjoy playing Kahoot! as a result of the competition elicited by the tool, as well as the fact that it is employed in a manner that will not have a direct evaluative impact on their reported levels of achievement.

In conversations with colleagues, it was noted that many students desired competition and liked the immediate feedback provided by receiving their score in the gamified quiz. There is a clear divergence in preference for Kahoot! features and, as such, the survey instrument sought to further examine student perceptions of stress, competition, and overall experience when learning with the gamified quiz. Indeed, competition is an inherent part of most gamified learning tools (including Kahoot!), and the connections between student wellness and competition need to be considered.

Finding #3: A Significant Minority of High-Achieving Students Dislike a Competitive Classroom Environment

A look at the data in Figure 4 indicates that while a majority of high-achieving students do enjoy learning in a competitive classroom environment, there was a significant minority (10%) who do not. This finding was supported by conversations I had with my students around the positive and negative stress associated with playing Kahoot! While most thrived from the competition (positive stress), others sometimes felt pressure and a sense of unease (negative stress) both before and during the gamified quiz. Although students overall enjoy playing Kahoot!, stress and competition may not contribute to promoting wellness or positively impact learning outcomes for all students. This finding provides a deeper glimpse into those students in Figure 1 who cited Kahoot! as an “OK” learning tool option.
Furthermore, in my interviews with colleagues at UTS, teachers stated that, while they agreed Kahoot! was engaging for students, this was sometimes to the detriment of more meaningful learning. For instance, while using Kahoot! as a training tool for a Kids Literary Quiz Team, the tool was found to promote “trigger-happy” students who let competition take precedence over the accuracy of answers. This problem was cited by teachers across disciplines, who noted that students often selected incorrect answers accidentally due to the fact that they wanted to maximize their awarded points for speedy responses.

Only 8% of students find the feedback “useless” or “seldom use” the formative guidance provided through learning with Kahoot!. Hence, from a student perspective, Kahoot! positively impacts learning. However, discussions with my colleagues and observations from my own practice reveal that a positive impact may not always be guaranteed. In tracking student data from each Kahoot!, teachers can make targeted interventions to assist students who appear to have knowledge gaps. It is imperative to note that when I discussed individual results with students, it was often revealed that incorrect answers had been accidentally keyed in as a result of rushing to get a higher score. Indeed, several teachers did not save student data precisely for this reason. Thus, the individual student data rendered from Kahoot! may be of less use than real-time class-wide feedback provided during the gamified quiz.

Catherine Wachter (2016) articulated that if students constantly receive feedback about their performance, it creates positive stress that perhaps they wouldn’t otherwise be aware of,
leading to actionable change. The student responses shown in Figure 6 illuminate an appreciation for the general feedback provided during Kahoot!, indicating that the edutech tool does facilitate meaningful learning for high-achieving students in the history classroom. However, it should be noted that the student statements focus pointedly on knowledge and information, as opposed to higher-order thinking or application skills. This is likely a commentary on the way that the tool has been used in my classroom to reinforce basic knowledge and understanding of concepts before moving on to activities that promote deeper learning.
REFLECTION

UTS is a frenetic environment – a place where both teachers and students really have to carve out time to reflect, if they can successfully manage their time to do so! The Eureka! research group created a designated time to reflect on aspects of my own practice, and to foster wider introspection into teaching and learning with the support and guidance of a talented group of educators. This collegial approach was reminiscent of being a graduate student once again, although with far more experienced peers to help guide research that was grounded in practice. The Eureka! research group worked symbiotically, and this facilitated more natural interactions and commentary that was necessarily critical to better support each other’s educational research.

In terms of future directions in my own practice, I now have a deeper understanding of the impact Kahoot! has on learners. My research has confirmed that high-achieving students are engaged learners when employing the edutech tool in the history classroom. However, it is clear that there are limitations to using Kahoot!, particularly with respect to the accuracy of its representations of student learning. I will most certainly continue to use Kahoot! for assessment as and for learning (formative assessment) purposes to improve student learning; however, I will refrain from using the tool in assessment of learning (summative assessment) practices due to the accuracy issues with assessment data raised by this research. It should also be noted that, since this research was conducted, Kahoot! has expanded its applications to include several other learning options (including team play, order placements, surveys, and other apps). I enthusiastically look forward to exploring these with my students in the future. In particular, these new options may assist in minimizing the stress and competitiveness that some students find unsettling (e.g., group vs. individual play).

Lastly, I am grateful to the Newton Foundation for funding the Eureka! program. Although I have been a reflective practitioner throughout my career, this has largely taken place in an informal context. Conducting teacher research has caused me to reflect with intent and professionalize my pedagogy in a new way. I have begun to shift from employing a linear operational framework to a more iterative and reflexive pedagogical approach. My Eureka! colleagues, led by Clare Kosnik, were instrumental in facilitating my transformation into a teacher researcher. I am thankful to the entire research group for their unwavering support. Lastly, I am indebted to my UTS colleagues for taking the time to share their Kahoot! experiences, and to my Grade 8 UTS history students (2016/2017) for agreeing to act as participants for this educational research. The students enthusiastically participated in all aspects of the research process, and felt empowered that their responses may impact the future of learning with Kahoot!.
REFERENCES


