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Every Step Counts: Adapting Qualtrics to Encourage Student Engagement in Library Orientations

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Abstract

Many libraries have adopted gamification strategies to enhance their orientation programmes, in the hope of encouraging better student engagement via goal-based design. A literature review reveals a lack of in-depth, granular data on participant behavior in these gamified activities, with evidence generally limited to post-event feedback and comments. Such data could potentially provide insights to help assess the extent to which orientation programme outcomes have been achieved.

An example of an orientation activity with in-depth usage data is provided by Hong Kong Baptist University Library's paperless, mobile-assisted Library Mystery Challenge (the Challenge). Designed using the popular data collection and analysis platform Qualtrics, the Challenge is presented to students as a scenario where they are tasked with helping the Library to find a missing student. Participants are given a series of clues that lead them to various locations, and at each stop they are provided with information on the nearby facilities and services. The Challenge has been run three times since Fall 2016, with close to 100% positive feedback from participants.

Game design using Qualtrics is cost-effective, customizable and scalable, and has required minimal staffing resources. The authors will present the design principles of the Challenge, with a particular emphasis on how librarians analyzed student data recorded at each step of completion in the Challenge, for example, participation and retention, average time to completion, etc., and how these insights into student behavior were used to refine the user experience in subsequent iterations of the Challenge. Practical suggestions and advice for making informed decisions through the use of data analytics tools will also be shared.

Keywords

Library Orientation; First-year Experience; Library Anxiety; Student Engagement; Qualtrics; Gamification; Outcome and Assessment

Introduction

Hong Kong Baptist University (HKBU) is a medium-sized liberal arts university in Hong Kong, with around 11,000 full-time students and 860 faculty members. Every year, the Library welcomes new students enrolled to the University at the beginning of the fall semester. For many years, first-year undergraduate students have been required to attend one mandatory classroom-based library orientation session. A traditional tour of the Library itself conducted by student assistants was optional. These tours were not well-attended by the students. Although no concrete evidence for this lack of interest was ever collected, one speculation is that other on-campus activities competing for student attention at the beginning of the semester were more attractive. Even for those few students that did actually take the tour, it was near to impossible to immediately assess the effectiveness of library tours at introducing the library space to them.

Nevertheless, library tours are still an opportunity for students to learn about the Library's facilities and services, and therefore increase the likelihood of students taking advantage of them during their time at university. Starting in the 2016-2017 Academic Year, the Library started to explore alternatives to traditional library tours. After a literature review and environmental scan of potential technologies, it was resolved to take a gamification approach that promised to be both engaging and cost-effective. In August 2016, a mobile device-based library tour called the "Library Mystery Challenge" (the Challenge) was designed on Qualtrics and promoted to new students. The Challenge guides students through the Library using the narrative device of a search for a missing student. Well-received in the first year, the Library continued to build on previous experiences and enhanced future iterations of the Challenge in 2017 and 2018.

Gamified library tours: A review of the literature

Over the past decade, many academic libraries have reported on their experiences developing gamified library tours, assignments, and instructional activities to engage students in a self-guided manner (McMunn-Tetangco, 2017). Library buildings, which are frequently multi-storey and house a variety of diverse facilities, are ideal venues for conducting scavenger hunt-style games, which require participants to navigate through various places to collect information and clues. Although there are reports of self-guided tours receiving positive feedback from participants (Marcus & Beck, 2003), a review of library websites conducted by McCain (2007) revealed that librarians had generally more negative views on scavenger hunt-like assignments in library settings. Purposeless and unclear scavenger hunt questions were particularly criticized not only because of the frustration they caused to participants, but also because of all the burdens they placed on the library staff that were called upon to assist.

For years, low-tech scavenger hunts or library treasure hunts were conducted with nothing more than pen and paper. In many cases, instructions were presented to the participants on one single

sheet of paper (Hughes et al., 2016; Renner et al., 2016). This format leaves little to the imagination in terms of what is coming up next, as participants can see at the beginning how the game will end. Furthermore, traditional scavenger hunt have often been characterized as ineffective because the questions are random, trivial, and outdated (McCain, 2007). Unless motivated by attractive prizes or made mandatory, thoughtlessly constructed scavenger hunts will likely have few participants. When students are required to retrieve several paper-based hints and clues from various locations, libraries need to assign staff to relevant locations to ensure such clues are found based on the correct responses to previous tasks in a certain order (Marcus & Beck, 2003). From an administrative perspective, verifying the results of scavenger hunts lay burdens on front line staff as they not only need to provide assistance but also check that participants have gotten the correct answer.

With the advent of smartphones, there has been an interest in the use of mobile apps to revamp pen-and-paper self-guided library orientations. Several university libraries have reported their positive experiences using third-party software or apps such as SCVNGR (Burke, Lai, & Rogers, 2013), Edventure Builder (Goldman, Turnbow, Roth, Friedman, & Heskett, 2016), and GooseChase for mobile device-based library orientations (Foley & Bertel, 2015). However, such apps are normally fee-based and their long-term viability cannot be assured. One notable example was SCVNGR, a social gaming platform that was used extensively by educational institutions, including academic libraries. Despite this interest, it was unceremoniously taken offline when the company behind it turned its attention to other products.

Although gamified library tours have been a popular topic in the literature, the evidence for their effectiveness that is offered is generally limited to post-event feedback and comments. To holistically assess the extent to which orientation program outcomes have been achieved, it is necessary to go beyond such subjective data and examine actual participant behavior. For example, questions such as "how long on average does it take to complete the game?" and "what percentage of participants drop out from the activity before completion?" should be addressed.

In the search for a scalable, robust, sustainable, and flexible platform for building the library tour, Qualtrics, a well-established survey platform widely used by many research, business and educational institutions, came to the attention of librarians. HKBU has a university-wide subscription to Qualtrics and librarians already had extensive experience in using Qualtrics for collecting feedback on various topics in the past. As a result, librarians were aware of the powerful skip and display logic built into Qualtrics that can be used for creating built-in hints viewable at the request of the participant. In 2016, the authors decided to use Qualtrics as the platform for the Library's new gamified library tour. Anticipating that feedback from participants would be crucial to future iterations of the tour, librarians placed as much emphasis on game assessment as they did on game design. Qualtrics provides rich data allowing librarians to

analyze students' preferred time to sign-up, participation and retention, average time to completion, number of additional hints displayed, etc. These provided insights into student behavior, and also served to inform improvements to future versions of the Challenge. In terms of long-term viability of this gamified library tour, the recent acquisition of Qualtrics by SAP in January 2019 (SAP, 2019) suggests that even greater functionality will be added to Qualtrics in the coming years.

Design and implementation

<u>Expected learning outcomes</u>

It was recognized that a self-guided library tour is not an ideal medium for teaching advanced information literacy skills, and that in this context first-year students may not be able to fully absorb, for example, concepts relating to the locating and evaluation of scholarly information resources. The topics covered where therefore mostly limited to introducing those facilities of the Library that were of immediate usefulness or general interest. The Library's discovery service was also introduced. Also, considering the many competing activities that new students may want to join, the Challenge was purposefully kept short (roughly 45 mins to complete). Last but not least, the Challenge was designed to give students a good impression of the Library as a friendly and inviting place that serves not merely as a venue for study but also as a source of learning and research support.

<u>Developing the story</u>

To engage students, the Library Mystery Challenge was designed to showcase typical daily student uses of the Library. This was enabled via a narrative device where participants were told they were tasked to help the Library to find a student called Maggie that has gone missing in the Library building. Participants were given a series of clues that took them to various locations, and at each stop they were introduced to facilities and services nearby. **Figure 1(A)** illustrates one of the Challenge stories that the Library has developed. **Figure 1(B)** illustrates one possible trajectory of the participants in completing the Challenge.
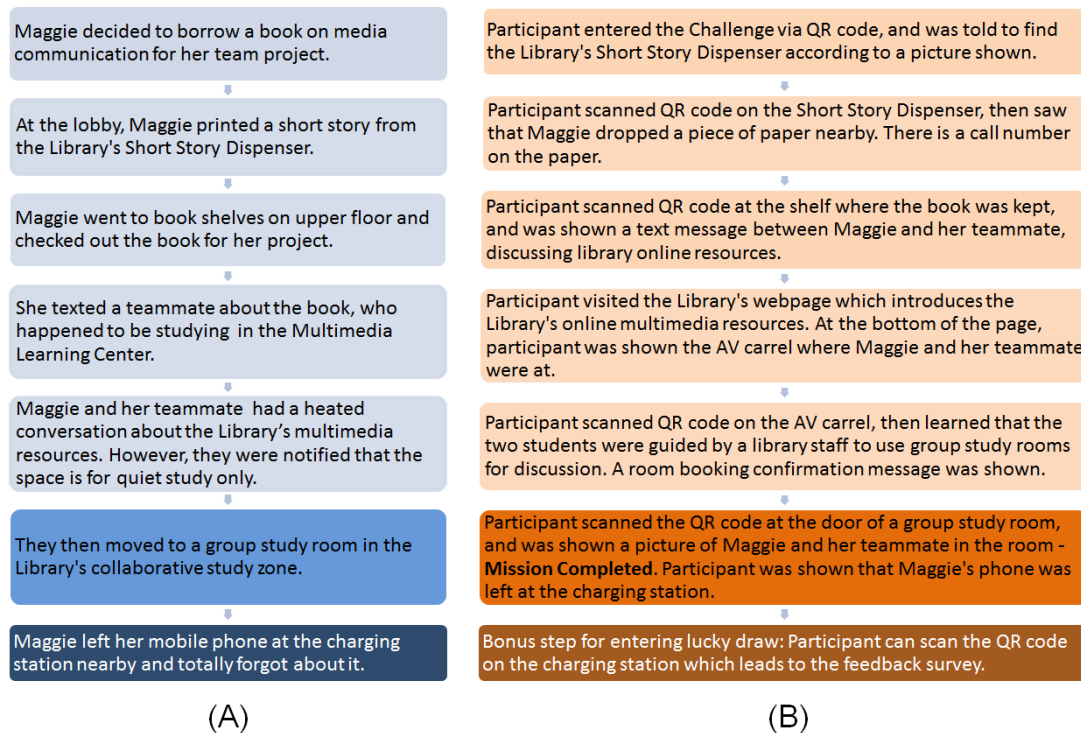
Figure 1. Illustration of one of the stories used in 2018. (A) Timeline of the student, Maggie, who was thought missing. (B) Predicted trajectory of a participant completing the Challenge.

Once a student scans the QR code provided on promotional materials for the Challenge (e.g. posters and digital signage), or directly visits the Challenge's online sign-up page, they are informed that the Library needs their help in finding a missing student and are provided with the first clue. The content displayed on their phone will lead them to the location of the next QR code, where they will find another clue, and so on. Typically, a participant needed to visit 5 to 7 stops to complete the Challenge. Most of the stops referred to physical locations in the Library building where participants can find a QR code leading them to the next step. A couple of stops or clues could be found in the Library's virtual presence – the Library website or Library research guides.

Qualtrics' s skip/display/piped text functions allow for customized display of choices and messages for each participant based on their previous actions. Using these features, librarians were able to design the Challenge with multiple storylines that participants could choose from. Also, participants can choose to skip tips or hints should they feel confident in solving questions on their own. **Figure 2** shows a built-in optional hint on how to locate materials in the Library, which would be useful for participants unfamiliar with the Library's classification system.
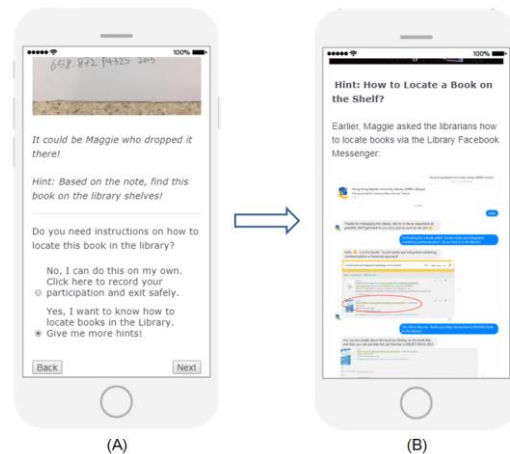
Figure 2. An optional hint embedded in the Challenge. (A) Asking participants whether they need a hint (B) Instructions on how to locate a book via a Facebook Messenger Conversation.

Implementation

The Challenge was released on the same the day as the required face-to-face library session, which is scheduled roughly one week before the first day of the academic semester in the fall. The Challenge is usually open for 3 weeks. Students can sign up and complete the Challenge in one go, or complete the tasks at their own pace.

Although hints were embedded into the game to help navigate participants to the next Challenge step on their own, all library staff were briefed on the activity via email and were thanked in advance for their assistance in case students sought support from them. As Qualtrics automatically verified whether participants' Challenge steps were completed correctly and in a certain order, the librarians only needed to check the Qualtrics platform once or twice a day to record and maintain a list of successful participations.

To incentivize student participation, each participant who completed the Challenge before the deadline was eligible for a library souvenir (e.g. stationary set, canvas bag, etc.) and was entered a lucky draw with a chance to win coffee coupons worth HK$100 (~AUD 20). The Challenge was promoted at the mandatory library orientation session. Posters and bookmarks were also designed to promote the activity to the University community.

Activity enhancements

Over the past three years, the Challenge has been enhanced with reference to the following factors: (1) Student feedback, especially those noting the Challenge's low level of difficulty and those asking about their "favorite places in the Library". (2) Emerging services and recent enhancements at the Library that required promotion. (3) User experience changes to make the instructions easier to understand.

After reviewing student feedback, librarians saw demand for an increased challenge. However, librarians were also wary of turning students off participation by making the activity too difficult. To cater for students with different expectations in terms of game difficulty, the Library's third iteration of the Challenge launched in 2018 offered two game options to students: easy or advanced. **Figure 3** highlights the latest landing interface of the Challenge.
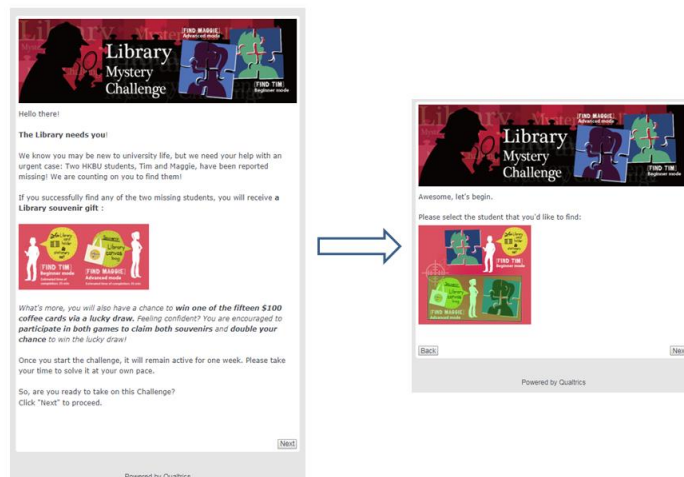

Figure 3. Landing page of the Challenge in 2018 with two game options.

Measuring student behaviors while completing the Challenge

The most recent iteration of the Challenge ran from 23 August to 14 September 2018. As noted above, two game tracks were made available to participants. In total, 213 individual students participated and many of them completed both game tracks. The "Find Tim" game (easy level) was completed 161 times and the "Find Maggie" game (advanced level) was completed 174 times. Qualtrics automatically records granular data about participant behavior while completing the Challenge. Notable examples include how many students viewed the optional hints, how many students dropped out of the Challenge and at what step, and how long each participant spent at each Challenge step. All these data can be analyzed to provide insight into the effectiveness of the activity. Unless specified, the data used for the present analysis is from the most recent iteration in 2018. For students who filled in feedback surveys for both game modes, only the first feedback survey submitted was included in the statistics.

The data were useful in determining at what points in time impact and engagement with the activity peaked. **Figure 4** shows the traffic of sign-ups and completions of the Challenge recorded in Qualtrics. The Challenge was launched on the day of the first-year orientation (23 Aug). However, the reaction as measured by the sign-up rate was lukewarm until the official beginning of the semester (3 Sept). This is not surprising because students are more likely to see the promotional signage and actually get involved with the activity when they are physically on campus. A further interesting observation is that few participants completed the Challenge on

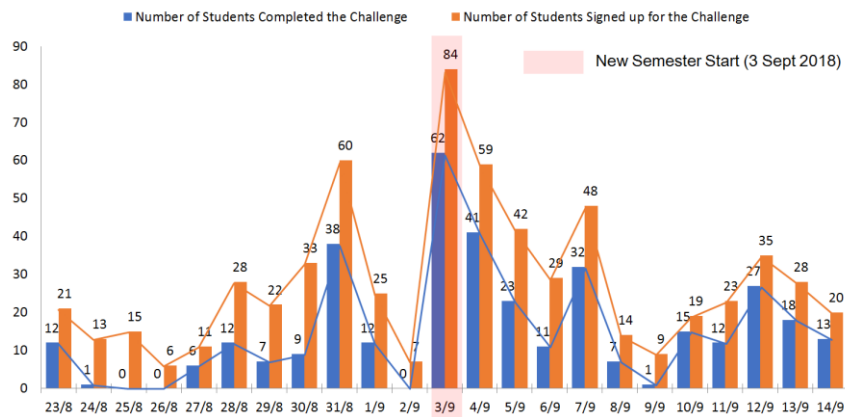weekends, suggesting that week days are probably still the best option for libraries to conduct activities.

Figure 4. Sign-up and completion date of the Challenge

The Challenge was designed to be self-paced. Roughly 75% of the students completed the Challenge within 4 hours of signing up, spending on average 30 min (easy track) and 35 min (advanced track) completing the Challenge. The Challenge was designed to help students familiarize themselves with the Library, and librarians consciously avoided creating overly-challenging questions with the potential to frustrate students. Feedback responses revealed that 63% of the participants think the numbers of Challenge stops are just about right, 6% think there should be less and 31% think there should be more, suggesting that the design of the Challenge has achieved an appropriate balance. This conclusion is also supported by evidence shown in **Figure 5** regarding participant opinion on the level of challenge presented.
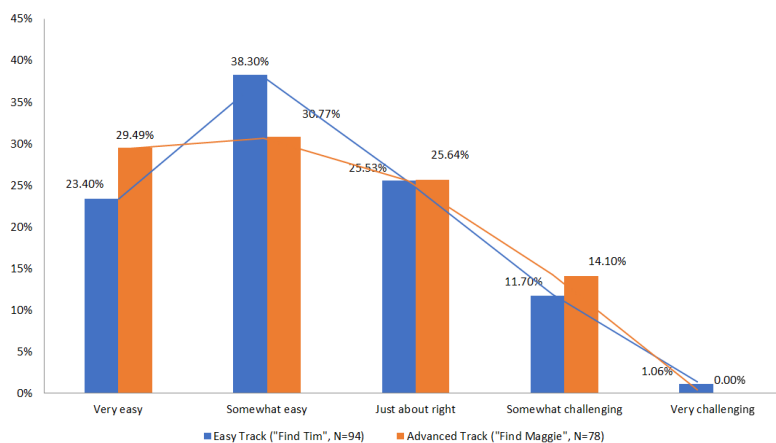

Figure 5. Participants' feedback towards the difficulty level of the Challenge

Getting students to sign up is a necessary first step. However, librarians found that sustained engagement beyond the sign-up stage was far from certain. The number of participants reaching each Challenge stop over the three iterations of the activity is summarized in **Figure 6**. A consistent pattern for all Challenges is readily apparent: As long as participants move one step

further than the sign-up, they are most likely to stick with the game until the end. Librarians came up with three possible reasons for the high drop-out rate after signing up: (1) Participants didn't find the introduction to the Challenge to be interesting or relevant to them. (2) Sign-up can be done online and participants that register outside of the Library may not be motivated enough to physically visit the Library to complete the Challenge. (3) Participants could not find the next Challenge stop successfully. In an attempt to retain as many participants as possible, the Librarians revised the second Challenge stops in 2018 to make them easily achievable and revised the sign-up messages to be as motivational as possible. As shown in **Figure 6**, the gap between "Sign-up" and "2nd Stop" is narrower in 2018 compared to earlier years, suggesting that the enhancements to the Challenge were successful in engaging and retaining more students.
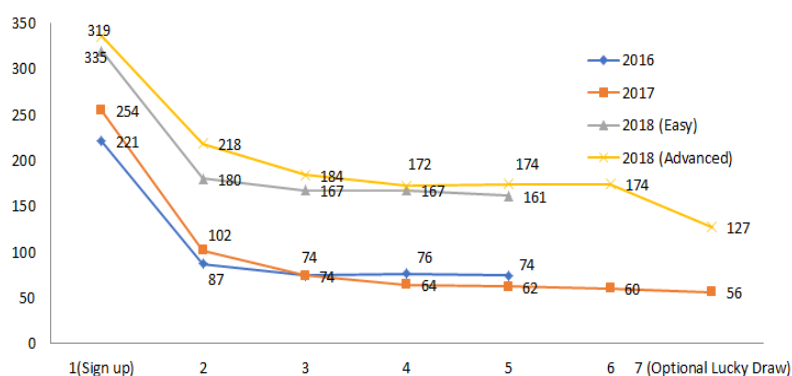

Figure 6. Number of show-ups at sequential stops after sign-up

In addition to studying participation behavior using data automatically recorded in Qualtrics, librarians also asked for direct feedback from the participants on their perception towards the Challenge on various perspectives. The game received close to a 100% positive response rate, as listed in **Table 1**. Of course, there is by definition no feedback from participants that dropped out before the final step where they received a survey invitation. Their responses may have been less positive, but nevertheless the positive responses received from those that completed the tasks is encouraging.

Percentage of positive responses to survey questions	Easy Track ("Find Tim")	Advanced Track ("Find Maggie")
I found this game interesting.	97%	100%
The technology helped me enjoy the game.	95%	92%
This Challenge helped me to learn about the Library's services, spaces, and facilities.	99%	97%
Will you participate in similar activities organized by the Library on a different topic?	100%	99%
No. of Respondents	94	78

Table 1. Participants' perception towards the Challenge

When asked to leave their comments for improvement and share the most useful piece of information they have learned, many participants left positive and encouraging messages in the survey. To highlight a few:

- *We should pay attention to little things around us! Besides, teamwork is important!*
- *I can ask for help in 3th floor and the staff is really warm! Thanks!*
- *There are much more e-books than the paper [print] books in our library.*
- *I found the exact position of MLC [Multimedia Learning Centre] of the 4th floor, besides, thanks to this challenge, I found the other printer nearby.*
- *Innovative way to encourage students to use library facilities.*
- *Prefer more steps to find the clues in this game!*
- *This game makes me feel the love of BU.*
- *It's interesting and I hope there will be more activities like this. Thank you!*

Furthermore, feedback received from the survey also demonstrates that this orientation activity was useful in relieving new students' anxiety in using library facilities as a new student. On a scale of 0 -100, participants were asked how confident they felt before and after completing the Challenge in the feedback survey. As shown in **Table 2**, they reported that they felt more confident coming to the Library and using its services for various purposes in future.

"On a scale of 0-100, how confident do you feel towards coming to the Library and using its services for various purposes?"	**Easy Track** ("Find Tim")	**Advanced Track** ("Find Maggie")
Before the Challenge	65.51	65.26
After the Challenge	78.96	82.34
No. of Respondents	90	78

Table 2. Participants' self-perception of their confidence using the Library

Conclusion

HKBU Library's Mystery Challenge has proven to be an effective replacement for traditional library tours, and was enjoyed by almost all of the participants that completed it. Cost-effective and flexible, self-guided library tours built in Qualtrics not only bring a smooth learning experience to the students, but also free up library staff time. Administrative tasks are minimized because all participant records are automatically stored in Qualtrics and are readily available for analysis as needed. Rich data collected over the three iterations of the Challenge shed light on student navigation behaviour and their perception towards the Library's services and facilities. Going forward, librarians envision enhancing the Challenge with emerging technologies such as

augmented reality. Activities of a similar nature may also be deployed to other library instruction sessions as appropriate. In terms of assessing how these activities can affect student learning and engagement with the library in the long run, longitudinal comparative studies on the impact of effective library orientation on student learning and success in their university studies can also be considered.

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