

# **EXECUTIVE SUMMARY**

## **Engaging Undergraduates in Research Through a Storytelling and Gaming Strategy: Final Report to the Delmas Foundation**

by

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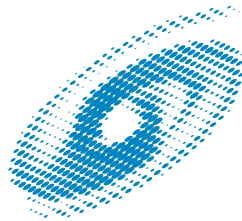
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## EXECUTIVE SUMMARY

### Why use games to teach incoming students information literacy concepts?

Librarians may be exemplary in terms of assisting students who want to learn about information literacy concepts, but they are able to reach only a fraction of the students who really need assistance. Our solution is to design, test, and evaluate a new method for teaching information literacy that combines dramatic storytelling and gaming (section 1). We have chosen *games* because what people are doing when they are playing good games is good learning (Gee 2004, 199), and *storytelling* to maintain and build player involvement, prevent game play from becoming tedious, trite, and mechanical, and appeal to a wide range of people (Murray 2000). Our name for this new teaching method is *storygaming*. Storygaming has promise for scaling from one student to thousands.

### What information literacy concepts did this project target?

We proposed to the Delmas Foundation to develop, demonstrate, and evaluate a *storygame* that teaches undergraduates the General-to-Specific (GenSpec) Research Model for conducting research and finding information (section 1). The GenSpec Model is based on the Search Strategy Model that Evan Farber and Tom Kirk promulgated at Earlham College over thirty years ago (Kirk 1974). The model advises students to start their research with broad overview tools such as general and discipline-specific encyclopedias, handbooks, and histories so they develop a general understanding of their chosen topics. Next, the model advances students to finding tools — bibliographies, abstracting & indexing sources, and catalogs — for specific information on their topics upon which they can build a solid foundation of understanding. Finally, the model advances the few students who want to specialize and achieve depth in their chosen topics to forward-chaining tools — citation indexes — to find the latest cutting-edge research.

### How does one play the *Defense of Hidgeon*, this project's storygame?

The *Defense of Hidgeon* is a web-administered board game (section 3). Game action takes place in the middle of the 14th century at the height of the Black Death's sweep through Europe. The objective is to be the Duchy's richest, fastest, and most accurate research team. To accomplish this, teams of four players play the game. They must land on each of the six different monastery libraries and give correct answers at least three times to the questions that are posted at monastery libraries. Correct answers earn teams a scroll and give them the opportunity to purchase an exclusive license to the library or challenge the owning team for its license. Teams are required to collect all 18 scrolls and urged to amass as much gold and property as they can during game play. In addition to the monastery library spaces, a roll of the game's electronic die lands game pieces on spaces that require different actions. For example, landing on the Fox Hunt space puts teams in the Hospital space where they must remain until they complete a task that demonstrates their fitness to continue researching.

The objective of the game is to prove to Hidgeon's ruler Duke Jerome that one's team can be trusted to use monastery collections responsibly, and can quickly, efficiently, and accurately find the desired information. The team to be proven so will be named Lord Researcher, Defender of Hidgeon, winner of the game.

### Who played the *Defense of Hidgeon*?

In late October 2007, the project team recruited students from SI 110, "Introduction to Information Studies," a class taught by Professor Robert L. Frost (section 4.1). SI 110 is the School of Information's only undergraduate course and attracts about 75 undergraduate students at all levels from a wide range of majors. Students were encouraged to sign up on teams of 4 to play the game. Game play began on November 3 and ended on November 29, 2007.

## **How did the project team introduce the game to SI 110 students?**

Our inclination was to downplay the game preferring instead to gauge student enthusiasm on the game itself not on a special buildup; consequently, SI 110's instructor mentioned the game in passing to students at the beginning of the semester and did not list it on the course syllabus or on any other formal document distributed to students. Recruiting students for game play, principal investigator Markey gave SI 110 students a brief introduction to the game. She did not want to predispose them to thinking about the game in a particular way, preferring instead that they develop their own ideas about what the game was teaching them (section 4.1).

## **Were incentives necessary to get SI 110 students to play the *Defense of Hidgeon*?**

Initially, 29 of the 75 students enrolled in SI 110 signed up on 8 teams that ranged from 2 to 4 students (section 4.2). Because only one team played the game over the first weekend, SI 110's instructor offered a half-letter grade increase to students who answered 40% or more questions correctly in the course of collecting all 18 monastery library scrolls. In response, an additional 20 students signed up on 5 new teams to play the game. Overall, 49 (65%) of the 75 students in the class signed up on 13 teams to play the game.

## **What game-play data did the project team collect to evaluate the game?**

While SI 110 students played the game, project staff captured data about their game play (section 5.1). Examples are questions attempted by type, questions answered correctly by type, scrolls earned by type, time elapsed since the start of the game, gold amassed, library licenses owned by type, and challenges. Additionally, the project team attended SI 110's three regularly-scheduled weekly Discussion Groups on November 27 and 28, 2008, to conduct focused group interviews with SI 110 students (section 5.2).

## **Who won the game?**

The InfoHunters team won the game with 14,680 points, making an estimated 15 roundtrips around the game board to answer 97 questions (section 6.1). Teams Heroes and Victors placed second and third, respectively. The project team gave \$100 to each of the 4 students on the InfoHunters team, \$67 to each of the 3 Heroes, and \$25 to each of the 4 Victors. The project team considered "successful teams" to be the 6 teams that met the criteria for the instructor's grade increase, that is, earning 18 scrolls with a 40% accuracy rate answering questions, and "unsuccessful teams" to be the 7 teams that failed to meet the criteria.

## **What patterns characterized the game play of unsuccessful teams?**

Some teams were dropouts right from the start (sections 6.2 and 6.4). They signed up on teams but did not play the game. Others tested the waters maybe earning one or two scrolls before becoming dropouts. A few teams played in spurts, for example, the Warriors team spurted from the middle to end of November. Although the Warriors answered questions accurately and were the only unsuccessful team to successfully challenge an opponent, they were unable to sustain game play for the length of time needed to earn 18 scrolls. Unsuccessful teams gave correct answers to 35.7% of questions, about 5 percentage points above what would be expected by chance (Table 6.3).

## **What patterns characterized the game play of successful teams?**

The game-winning InfoHunters were "instant starters." They were the only 1 of 13 teams that began game play immediately after the game started on November 3, and made significant progress toward amassing gold and game assets within a week of the game's start (sections 6.2 and 6.5). The game play of "last-minute rushers" took place during the last 4 days of game play. Most last-minute rushers were concerned with meeting the criteria for the instructor's incentive and did not engage in game play connected with



amassing gold or game assets that would result in a monetary award from the Storygame Project team. Pre-Thanksgiving dashers were a handful of teams that played the game in spurts before Thanksgiving break. Some of these teams became last-minute rushers to achieve game-play objectives connected with the incentive before game play ended on November 29.

### **Which questions were the most difficult ones and why?**

Successful teams answered 51% of monastery library, 53% of Sage Advice, and 65% of Library Study questions correctly (sections 6.5.2 and 6.5.6, and Tables 6.4 and 6.7). Successful teams fared better with web (67%), encyclopedia (62%), and journal-article database (62%) questions because they could do the research *online* at their personal computers (section 6.5.2). Because correct-answer percentages for books (43%), edited works (39%), and citation databases (42%) were only about 10% to 13% higher than players would fare at guessing answers, we sought explanations for such low percentages. In focus groups, game players confessed that they did not visit the U-M Library's reserves collection to borrow books and edited works and examine them for answers to questions (sections 6.5.3 and 6.7.10). In fact, successful teams were less likely to answer monastery library questions correctly when they had to examine any item — a web page, encyclopedia article, book (figure 6.4). The project team speculated that undergraduate students' lack of familiarity with citation database searching and the complicated nature of the game's citation database questions contributed to their especially low accuracy rates for citation database questions (section 6.5.3). Difficult questions were also ones with multiple answers (section 6.5.5 and figure 6.6).

### **Did teams experience the full range of game functionality?**

Because the InfoHunters and Heroes owned most exclusive licenses, all challenges involved one of these two teams (section 6.5.8). Only 1 of 13 challenges was a complete challenge in which both challenger and owning team submitted bibliography entries to the game. The other 12 challenges were incomplete with either challenger or owning team or both failing to submit bibliography entries within the 4-day deadline. In third place, the Victors team lost a handful of challenges to the first-place InfoHunters. The other three successful teams — Valiant, Authorities, and Maize — played the game at a low level, limiting their activity to answering questions and earning scrolls that would enable them to meet the instructor's incentive.

### **What game functionality was problematic and why?**

Despite the project team's best intentions, the Hospital was a real show-stopper (section 6.6.1). Game players resented leaving their personal computers to go a U-M Library to complete the task. They recognized that Hospital tasks gave them opportunities to learn about library services; however, their goodwill about the Hospital turned sour when a stay in the Hospital brought their game play rhythm to a sudden halt.

Game players would have benefited from feedback that told why their answers to questions were incorrect (section 6.6.2). Adding versatility to gold, the game's currency, would figure into the redesign of the game (section 6.6.6). Students identified new and different genres for future information literacy games (section 6.6.6) and suggested solutions to the multiple board problem (section 6.6.5).

### **What did students learn from playing the *Defense of Hidgeon*?**

Students cited these benefits of game play (section 6.7.2): (1) learning how to use the tools of research, (2) doing research tasks connected with various online tools over and over again, and (3) confronting and solving important problems during the research process. They did not explicitly say that the game taught them how to think about doing research or give them opportunities to do so (section 6.7.3). Several upperclassman said they already knew about research and online searching (section 6.7.1). Some students preferred to be told directly what they would learn from game play. Choosing between games and

traditional approaches to learning information literacy skills and concepts, students were divided between the two (section 6.7.4.).

### **What premises should guide the development of future information literacy games?**

Based on our evaluation of the *Defense of Hidgeon*, we arrived at these eight premises that should guide the development of information literacy games generally:

1. Game play must contribute in a useful way to the coursework students are already doing.
2. Game play that gives players mastery over one key concept, task, or procedure is preferable to comprehensive game play.
3. Game play must count toward students' grades in the course.
4. Game play must give students opportunities to see other researchers at work so they can connect what they do to what others do.
5. Students want positive and negative feedback from games to improve their performance.
6. Although students want to be in control during game play, they will collaborate with their peers when the collaboration furthers what they want to accomplish.
7. Students must have concrete evidence that leaving their computer to do research will have a payoff in terms of improving their research or affecting their grades.
8. Game play must foster opportunities for students to reflect on their own research habits and what they are learning.

### **How can I play the game?**

The Storygame Project team moved the *Defense of Hidgeon* to a professional web server. Readers are invited to serve as game administrators and host game play between teams or individuals or a combination of the two. Section 7.10 gives brief instructions on administering public or private games. Navigate to [http://storygameproject.org/team/new\\_account\\_and\\_board/](http://storygameproject.org/team/new_account_and_board/) to initiate the administration of a public or private game. Please be advised that finding answers to the game's questions about books, edited works, and journal articles may require access to the monograph collection and licensed digital collections of the University of Michigan.