

# Virtual Property Manager: Providing a Simulated Learning Environment in a New University Program of Study

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## ABSTRACT

This paper relates the experience that students have while accessing Virtual Property Manager (VPM), a Web-based simulation learning tool designed to introduce students to a new discipline being offered at the university – Residential Property Management. The VPM simulation was designed in part to develop student interest in the new program. Results indicate that this simple simulation device did make a notable impact on student interest. Additionally, student acceptance and self-reported impact differed significantly based upon the delivery context. Adding a competitive reward element to the simulation experience improved student's evaluation of the software and self-reported interest in the field. Results indicate that educational simulation evaluation, acceptance, and performance may often be substantially influenced by the delivery context, rather than simply the program itself. Developers may do well to focus "outside the box" of program content to promote audience-specific delivery environments.

**Keywords:** Educational simulations, online learning, stakeholder research, residential property management, web-based simulation, problem-based learning.

## 1. INTRODUCTION

In the academic environment, exposure to a variety of media resources can provide a healthy stimulus for student learning [1]. Aside from online learning resources, which have become increasingly available to students, a number of simulation-type

learning tools proliferate throughout the American classroom. Combining online tools with problem-based learning methods provides a dynamic environment through which students can prepare themselves for the professional world. Problem-based learning involves many specific types of competencies, including the ability to adapt to and participate in change, deal with problems and make reasoned decisions [2]. As a result, problem-based learning has been referred to as "apprenticeship for real-life problem solving" [3, p.65, 4, p. 26]. Educational simulations have proven their value in a diverse range of subject matters, from science and engineering to history and business. [5, 6, 7] However, analysis of simulation programs tends to focus almost entirely on the program content itself, interfacing with a homogenous "user" in a typically undefined delivery context. This narrow view may leave unexploited opportunities in critical areas of user segmentation and environment. Indeed, an exclusively "inside the box" approach to educational simulation can leave teachers without any defined role in the process, even where the anticipated delivery environment does include them. [8]

The challenges involved with creating a problem-based learning computer simulation exercise are only exacerbated when the online instructional tool is introduced while trying to build interest in a new academic program of study. Such was the environment in which Virtual Property Manager (VPM), an online computer simulation tool, was developed in 2005.

The VPM learning tool originated conceptually within the College of Family & Consumer Sciences at the University of Georgia. Disparate academic

fields exist within the College, such as Foods and Nutrition, Child & Family Development, Textiles and Fashion Merchandising, and Housing & Consumer Economics (HACE). In the Fall of 2004, the HACE Department formalized a partnership with the Georgia apartment industry, in the attempt to not only broaden the academic body of knowledge to which housing-related majors are exposed, but also to help address a widespread shortage of competent, college-educated professionals within the multifamily, or apartment, sector of the housing industry. Like multifamily housing executives in other states, the officials at the Georgia Apartment Association realize that the industry has lost some of its appeal as evidenced by the homeownership rate, which is currently approaching an all-time high of 70 percent [9]. By aiding in the development of academic programs at recognized academic institutions, the industry is seeking a more college-educated work force. Additionally, it is hoped that a more formalized academic curriculum will help the residential property management profession become a more attractive post-graduation occupation choice for graduating seniors. Effective residential property managers must develop a broad range of skills, both academic and practical, to interact with investors, such as individual owners or publicly held Real Estate Investment Trusts, and simultaneously supervise relations with individual tenants. It is important to note that today's property manager is considered to be a master in many aspects of his or her field, requiring the employee to be proficient at a series of tasks. In some sense, the property manager is reliant upon *knowledge intensiveness*, a concept described as "highly contingent outcomes or dependency on chance events, many possibilities an agent has to choose from, necessity of creativity in solving problems, quick obsolescence of knowledge, [and] dependency of performance on agent skill" [10, p.1, 11]. The complexity of the tasks that the multifamily housing manager must address on a daily basis makes the job of residential property management difficult and somewhat intimidating to inexperienced young people. Past research has indicated the potential of computer simulations to improve student confidence in the face of complicated and otherwise unfamiliar situations, while motivating students to "become involved in the real processes that [the] simulations seek to emulate." [10, 11].

Students who might have otherwise been apprehensive about the prospects of working within the apartment industry are now being given the opportunity to experience the nuances of the industry through a computer simulation learning environment. VPM puts students in a virtual multifamily unit management environment. By facing crises that multifamily operators normally experience, students can experientially apply concepts learned in the classroom. In addition, students are encouraged to compete with each other over a number of performance standards that exist in the multifamily industry, such as profits, occupancy status, tenant retention, cost minimization, and management reputation. Along the way, students are encouraged to make the types of day-to-day decisions that a normal multifamily property manager would. These activities include (but are not limited to) setting optimal rent levels; hiring and firing maintenance, security and leasing personnel; and marketing the property. The instructional advantage of VPM is that new concepts introduced into the classroom can be integrated within the simulation to help students better understand the consequences of a property manager's actions (or lack of action). Additionally, these types of technological innovations within the classroom can build a greater sense of cohesiveness within the academic department [12].

Development of the VPM application had both a service learning and a research component aside from its basic instructional purpose. Students temporarily assigned to the development team were encouraged to approach and interview apartment management personnel to obtain various data regarding their operations. This process kept the simulation parameters as close as possible to the real world environment, while allowing students to gain exposure to prospective future employers in the process. This form of contact with private industry allows those executives within the multifamily community to participate as an integral part of the learning curriculum. Stakeholder research of this nature has been proven effective in a variety of cases involving academia and private industry, and helps foster the "shared vision" concept of the systemic change process involving technological innovation within the classroom, a concept that has been suggested to provide enhanced meaning to industry stakeholders [13].

## 2. EXAMPLE OF SIMULATION

The figures below display the game appearance and performance measurement outcomes. Figure 1 provides a visual snapshot of the virtual building that the student is expected to fill. Each lightened window signifies an occupied unit. In total, there are 90 residential units that the student is expected to fill. The task of filling these units is made easier through the practice of effective marketing campaigns, informed hiring decisions, and responsible cash management practices.

**Figure 1**

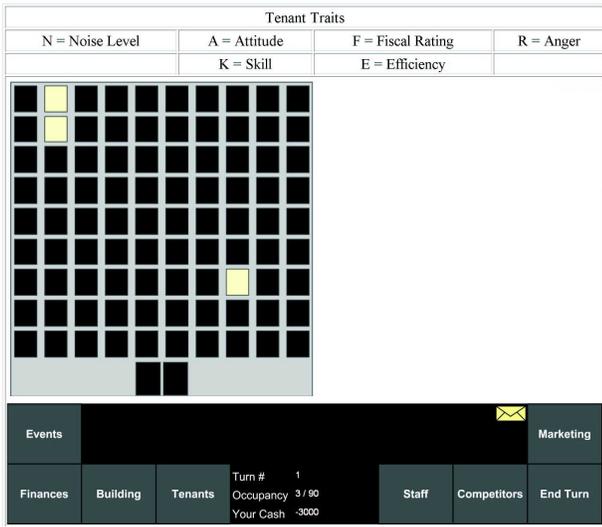


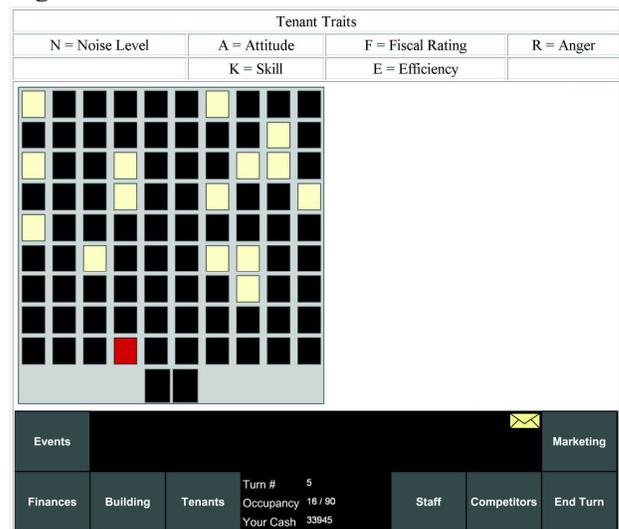
Figure 2 displays performance measures, including available cash, vacancies, move-ins, and various expenses incurred over time. Figures 3 and 4 illuminate some of the problems that property managers can expect to face, especially those related to problem tenants.

**Figure 2**

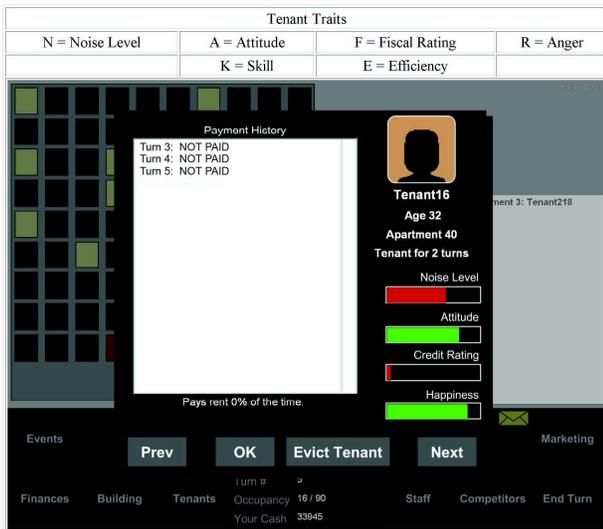


In Figure 3, a crisis is identified when a red light appears over a problem unit. This particular unit had damage within it, due to an altercation that broke out between two existing tenants. Further investigation of the principals involved in the disruptive behavior indicates that one tenant's personal information (shown in Figure 4) reveals that he has anger tendencies and has been delinquent on his rent payments for many months. An effective property manager could probably have avoided this unfortunate situation by evicting the delinquent tenant earlier. During this phase of the simulation, it would seem appropriate that the instructor reinforce with instructional material on the complexities of eviction and tenants' rights to better enable the student to handle such a situation in the future.

**Figure 3**



**Figure 4**



### 3. RESEARCH METHODOLOGY

#### Background of Population Studied

The study was conducted among a target population of 65 students who had enrolled in an introductory HACE course (entitled “Family Economic Environment”) during the Summer of 2006. The introductory class was intentionally chosen because of the disparate academic fields that were represented within the class. Another advantage of this population is that many of these students are still undecided about their major. Innovative programs such as VPM may serve as a catalyst for future decisions to take Residential Property Management courses.

#### Research Questions, Survey Instrument, and Research Design

The intent of the research was to provide answers to three broad areas of inquiry. The primary research question was “Is there an interest in VPM as a teaching tool, and does it spark an interest in enrolling in Residential Property Management courses at the College?” A subsidiary question regarding interest in the simulation is whether there is a difference in the satisfaction levels of both HACE and non-HACE related majors. Another question of interest was whether the introduction of a competition-based system would affect satisfaction or performance levels. Because the multifamily industry is competitive, the VPM design team emphasized the need for the instructional tool to encourage competition among the students to help prepare them for success in the professional world.

At the same time, there may be a risk that such a competitive-based system may frustrate the end-user due to the complexities of the simulation program.

The survey instrument used in this research was a five point Likert-scale questionnaire designed to gain information on the impressions of the end users. The questionnaire was anonymous to help encourage more forthright responses by the students involved. This method has been used before in research covering online learning techniques, with generally positive results in terms of response rate [1].

The student population was randomly divided into an experimental (competitive) and a control (non-competitive) group. Students who were part of the non-competitive group were asked to simply try out the program for a total of twenty-five minutes, and provide a few responses about VPM at the conclusion of the time period. The experimental group, however, was told that the person who had the highest cash balance after 25 minutes would be given a \$10 gift certificate at the conclusion of the exercise. The reasoning behind this experiment was to determine whether or not students enjoyed this competitive environment, which serves as a proxy for the types of success measures that they would face out in the property management industry. Neither group was informed of the differences between each group ahead of time. All told, the rooms had a total of 28 participants each, with females far outnumbering the males by more than a 2:1 ratio.

**Table 1: Student Responses After Simulation**

	Non-Competitive Group "Strongly Agree"	Competitive Group "Strongly Agree"	Non-Competitive Group "Somewhat Agree" or "Strongly Agree"	Competitive Group "Somewhat Agree" or "Strongly Agree"
My interest in residential property management has increased as a result of playing the Virtual Property Manager game.	0%	14%**	25%	36%
I felt that I learned something about residential property management through playing this game.	7%	25%*	64%	68%
I believe this game is an effective instructional tool.	18%	32%	64%	82%*
Playing the Virtual Property Manager game was more interesting than the typical classroom experiences I have had at the university.	43%	46%	75%	89%*
I put in a lot of intense effort during my time playing the Virtual Property Manager game.	14%	43%**	64%	71%
This game was easy to understand and navigate.	14%	32%	71%	71%

\*t-test indicates significant difference from non-competitive group at the .10 level; \*\* at the .05 level

#### 4. RESULTS AND DISCUSSION

The overall survey results indicate that the VPM simulation had a positive impact on many students. With 89% of the competitive group and 75% of the non-competitive group rating the simulation as more

interesting than the typical classroom experience, student acceptance of the exercise was clearly high

Table 1 demonstrates the substantial, positive impact of introducing a competitive reward element to the game. This effect occurred even though the potential reward was just \$10 for the highest score in a class of 28 students. As we might expect, students' self-reported effort levels rose substantially, with the proportion strongly agreeing that they "put in a lot of intense effort" jumping from 14% in the non-competitive group to 43% in the competitive group.

What has even more fascinating implications for simulation designers is the recognition that students in the competitive group were more likely to rate the simulation as being an effective instructional tool and easy to operate and navigate. Of course, the simulation and instructions were identical in both groups. What was "in the box" did not change, but this simple change in the delivery context altered the perception of the simulation's ease of use and effectiveness.

Students in the competitive group were also more likely to rate the experience as interesting and educational. Again, the results demonstrate that a small change in the delivery setting introduced by the instructor can have a dramatic effect on the experience.

One of the goals of exposing students to the Virtual Property Manager simulation was to increase interest in the field of residential property management. On its face, this is an ambitious object for any single 25-minute, self-guided simulation. Because the object of this exposure is, ultimately, to recruit a few of the students to a particular career field, we are particularly interested in scenarios that create a dramatic impact in at least some students. Success in this goal, as measured by students who "strongly" agreed that their interest was increased, appears to depend entirely upon the introduction of a competitive reward element. In the non-competitive group none of the students "strongly agreed" that their interest in residential property management had been increased. Yet, 14% of the competitive group did "strongly agree" that their interest had been increased. When we include those who also "somewhat" agreed that their interest was increased, we see positive effects in 25% of non-competitive students, and 36% of competitive

students, showing that the non-competitive exposure still has a mildly positive effect on increasing interest, but lacks the dramatic impact for any individual students.

The impact of adding the competitive factor held true, even though the average level of self-reported computer savviness was *lower* for the experimental group. Thus, the addition of the competitive factor seemed to work well for the non-technical user. The potential significance of this overall finding is that the typical student seems to respond well to a competitive reward atmosphere within a learning setting, regardless of pre-existing ability and familiarity with the exercise. We also note that the highest scoring student received a small reward, but no penalties, academic or otherwise, were issued to other students.

Other factors also proved interesting during the survey analysis. Male and female students were evenly divided between the competitive and non-competitive groups to allow investigation into gender differences in our results. Although descriptive statistics indicated a slightly higher rating of the simulation from male students, this distinction was statistically significant only on the issue of whether the simulation was more interesting than the typical classroom experience at the university. On this issue, 100% of the male students “strongly” or “somewhat” agreed, while only 73% of female students did so. This variation may reflect gender differences in the enjoyment of the simulation or in the distaste for the typical classroom experience. (The latter explanation is actually more consistent with the results, given that this comparative issue generated the only statistically significant difference among all of the simulation ratings.) Males were also far more likely to rate themselves as more technologically savvy than the average person.

The descriptive statistics indicate that students majoring in the Department of Housing and Consumer Economics were slightly more likely to agree with positive statements about the simulation. However, none of these differences were statistically significant. The importance of this result is that the simulation appears to appeal to those who were not previously interested in the field of Housing and Consumer Economics at almost the same level as to those who had already declared an interest. Given that a primary goal of the simulation

is to generate interest in a new area of study, this appeal to non-majors is highly encouraging.

## 5. CONCLUSION

Further research is needed to determine whether performance in the VPM simulation project adequately relates to the types of conditions that exist in the multifamily housing arena. One possible way of checking the reliability parameters of this software is to continue consultation efforts from within the multifamily industry to insure that the experiences included within the simulation remain as true to life as possible. Some within the industry may be reluctant to embrace this type of new technology because it threatens to disrupt the familiar ways in which those within the industry have been conditioned to feel about education methods and their relevance to the residential property management field. This type of acceptance is key to the successful implementation of “systemic change”, which is crucial to adoption of technological innovations within the education field [14]. It also gives the research team a chance to relate some of the other successful examples of technology introduction into other traditionally service-oriented professions with positive results [12].

Future plans for VPM include differentiating the type of apartment building being operated to include luxury accommodations and public housing properties. The student will also be expected to understand the regulatory environment in which he or she operates, complying with various state and local ordinances covering such issues as eviction proceedings, employment laws, and building codes. With subsequent support of organizations within the multi-family housing industry, the VPM development team is open to the idea of exporting the product to any of the colleges and universities that currently offer some form of Residential Property Management program, which would require adjustments to be made to allow for changes in state laws covering the operations of multifamily properties in those areas of the country.

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