Design Experiential Learning Activities for MIS Introductory Courses

Full Paper

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Abstract

Experiential learning activities (ELAs) that are industry-partnered and real-world problem-based can provide undergraduate students with concrete experiences of using information technologies in the field. Flow theory provides a theoretical basis to guide the design of ELAs, ensuring that the goals are clear, feedback is explicit, and the challenges and skills are balanced. Based on this theory, we developed two ELAs, implemented them in two different introductory MIS classes and surveyed students' perceptions of their experiences. The results confirmed that flow theory provides an appropriate theoretical basis for effective ELAs. Based on these results, new guidelines for designing ELAs are presented.

Key Words

Experiential learning activity, flow theory, attitude, satisfaction, challenge, skills, goal clarity, feedback, concentration, control

Introduction

A major challenge faced by those teaching business education, including management information systems (MIS) is to get students excited about the concepts and technologies taught in classrooms and help them relate their classroom learning to real-world situations (Clinebell and Clinebell, 2008). In addition, our students are also looking for opportunities to build connections with practitioners (Umbach and Wawrzynski, 2005; Van Doren and Corrigan, 2008). There is a need to design learning activities that provide concrete experiences that involve applying information technologies in a field setting and using these experiences to facilitate interactions with both practitioners and faculty members. According to Kolb (2014), experiential learning is a way to learn through interaction with subjects. Thus, we contend that an experiential learning activity (ELA) that is industry-partnered and real-world problem-based will address this need.

Experiential learning can improve skill development and help students obtain deeper insights into the concepts involved (Granitz and Koernig, 2011; Rienzo and Han, 2011). Students' engagement in the real-world activities of commercial enterprises can also improve the communication and collaboration between academics and industry (Bennis and O'Toole, 2005; Lambrechts, Bouwen, Grieten, Huybrechts, and Schein, 2011) and providing more chances for students to be exposed to industry. Although studies have highlighted the importance of ELAs in business education (Godfrey, Illes, and Berry, 2005), few have considered how to design effective ELAs. In order to develop such a theoretical foundation for ELA design, we searched the literature and identified flow theory as a possible candidate. The reason we chose this theory is that students need to engage in the ELAs so the learning will actually happen and flow theory helps explain the conditions under which people would engage in certain activities.

In the next section, we review the literature on experiential learning and flow theory and develop a series of hypotheses. Next, we detail the methodology, the development of two ELAs based on flow theory, their implementation with two undergraduate classes, and the responses from questionnaires administered to students in the classes. An analysis of these responses led to the development of a flow chart that provides guidelines for creating an effective ELA. We conclude by discussing the limitations of this study and possible directions for future research.
Literature Review

Experiential Learning

Experiential learning means learning through reflection on experience (Kolb, 1984). Various disciplines have adopted experiential learning as an important pedagogical tool, including business. For example, simulation games are a popular tool that allows students to practice business concepts. Although many studies highlight the role of experiential learning in strengthening the learning outcomes in business education (Kolb, 1984; Bobbitt, Inks, Kemp, and Mayo, 2000; Kiili, 2005), few have proposed a process for conducting ELAs, especially when they aim to solve real-world problems. This research addresses this need by applying flow theory to design and implement an ELA in an introductory MIS course.

Past research has shown that use of ELAs in introductory MIS classes can increase both knowledge and skills (Rienzo and Han, 2011; Wu and Sankar, 2013). However, an effective ELA also needs to improve students’ attitudes and satisfaction (Abenza, Olivo, and Latorre, 2008; de-Marcos et al., 2010; Shaw, 2010). Students’ attitude reflects how they value the ELA (McCarthy & Tucker, 1999). Negative attitudes will raise concerns that students are not engaged in the task and do not feel responsible for carrying out the ELA (Stanton, 1994; McCarthy & Tucker, 1999), while satisfaction with an ELA leads them to want to repeat the learning process in the future (Sun, Tsai, Finger, Chen, & Yeh, 2008; Toral, Barrero, Martinez-Torres, Gallardo, & Duran, 2009). Such attitude and satisfaction are especially important in an introductory level class because the aim of such a class is to provide an overview of the discipline and encourage students to see links between that discipline and others (Ford, Smith, Weissbein, Gully, and Salas, 1998). Therefore, in this research, the effectiveness of the ELAs was measured based on students’ attitude and satisfaction towards them. Both quantitative and qualitative methods were used to measure whether an appropriately designed ELA based on flow theory does indeed improve students’ attitudes and satisfaction (Shrivastava, 2010).

Flow Theory

Flow describes a smooth experience related to the participation of any activities, even when they are highly physically or mentally demanding (M. Csikszentmihalyi, 1990). The theory states that it should be possible for any person to experience flow in any activity, but the participant and the activity must meet certain prerequisites before flow can occur (Cowley, Charles, Black, & Hickey, 2008). According to Nakamura and Csikszentmihalyi (2002), flow occurs when: (1) the activity is challenging but accomplishable, (2) the activity has clear goals, (3) the activity provides immediate and clear feedback, (4) the participant feels fully in control, (5) the participant’s chronological sense is distorted, (6) the participant is deeply involved in the activity and experiences a loss of concerns, (7) the participant feels self-fulfilled after finishing the activity, and (8) the participant is in a state of focused concentration on the activity. The first three aspects describe the characteristics of the activities and the latter five describe the psychological feelings participants experience as a result of participating in the activities (M. Csikszentmihalyi, 1990).

Flow theory has been widely adopted in many fields, including improving students’ learning engagement (Shernoff, Csikszentmihalyi, Shneider, and Shernoff, 2003; Cowley et al., 2008). Shernoff and colleagues (2003) applied flow theory to the task of creating an optimal learning environment and motivating students to learn and Sibthorp and colleagues (2011) took this further, reporting that learners who balance goal-related motivation with experience-related motivations such as flow are more likely to continue engaging in learning processes. Therefore, in this research we chose it as the theory foundation for design effective ELAs so that students’ will engage when they participate in the activities and eventually improve their learning attitude and satisfaction. According to previous literature, for education, five of the eight elements, namely task challenge, goal clarity, feedback, concentration and perceived control, have been identified as keys in creating a flow which will improve students’ learning outcomes (M. Csikszentmihalyi, 1990; Shernoff et al., 2003). We therefore design ELAs based on these five factors and argues that ELAs with such design will help students reach flow status during their participation and thus improve students’ attitude and satisfaction.
Task challenge

Task challenge directly impacts the experience that individuals obtain from executing an activity (M. Csikszentmihalyi, 1990; Ghani & Deshpande, 1994). Increase in task challenge is impacted by the novelty of the task (M. Csikszentmihalyi, 1990). When a person is challenged to their limit when accomplishing an activity, he/she will more likely feel interest and curiosity towards the activity. Also, the challenge cannot exceed the skills of the participants or they will feel that they are losing control over the activity and become worried or anxious, even frustrated (Hsu & Lu, 2004; Chen, 2007). Therefore, it is important to maintain a level of challenge that is neither too hard nor too easy. An adequate level of challenge has long been considered a key factor for “flow” to happen in activities, including education (M. Csikszentmihalyi, 1990). Challenges keep students attracted and engaged in an activity, thereby helping them stay focused on the subject matter. Finishing a challenging task also provides a feeling of satisfaction to participants (Sweetser & Wyeth, 2005). Thus we propose:

H1: If the students perceive higher challenge when they are participating in the ELAs, their (a) attitude towards and (b) satisfaction with the ELAs will be better.

Goal clarity

Goal clarity defines the primary and intermediate objectives to be achieved by performing the activities (I. S. Csikszentmihalyi, 1992; Sweetser & Wyeth, 2005). Researchers have noted that goal clarity significantly impacts human experiences in a variety of contexts. For example, in the context of playing games, the player first needs to have a clear understanding of the game, specifically, what his/her role is and what should be accomplished. They can then participate fully in the game and enjoy the process. In education, a coherent presentation of learning goals, tasks, and content is one of the main predictors of achieving higher learning outcomes (Seidel, Rimmele, & Prenzel, 2005; McTighe & O’Connor, 2009). When students are participating in a real-world project, it is important for them to understand why they need to be part of the project and its relevance to their class materials. Understanding the goal of ELAs generates a positive mood and enhances students’ engagement in the activities. Also, a clear goal of the project sets a standard for the performance that will guide students’ behavior (Seidel et al., 2005; McTighe & O’Connor, 2009). Thus we propose:

H2: If the students understand the goal of the ELAs better, their (a) attitude towards and (b) satisfaction with the ELAs will be better.

Feedback

Feedback helps participants understand their success or failure in performing the activity. Appropriate feedback is the basis for any goal-directed action (Kiili, 2005). Feedback can help participants refine their skills; students use feedback as a desired resource to gain perspective, signal weaknesses, and recognize achievement (Martocchio & Webster, 1992; Kiili, 2005; Jegers, 2007). Feedback also provides participants with information on their progress in accomplishing the task, which guides them in the right direction to finish the task (Kiili, 2005; Jegers, 2007). Feedback is necessary to generate flow in any activity, especially in learning (M. Csikszentmihalyi, 1990). Thus we propose:

H3: If the students receive better feedback when they are participating in the ELAs, their (a) attitude toward and (b) satisfaction with the ELAs will be better.

Focused concentration

Concentration is the alignment of an individual’s attention on a specific field and is key to generating flow experience (M. Csikszentmihalyi, 1990). It has been identified as affecting the overall experience positively in both working and learning activities (Koufaris, 2002; Guo & Klein, 2009). For example, concentration is one of the critical factors in generating users’ enjoyment in on-line experiences (Hsu & Lu, 2004). Concentration is also an important factor in creating a favorable academic learning environment. Research has shown that concentration is one of the most critical requirements in education (Jassawalla, Sashittal, & Sashittal, 2009). Concentration leads to meaningful learning (Shernoff & Csikszentmihalyi, 2009), improving students’ cognitive processing depth and academic performances (Corno & Mandinach, 1983). Thus we propose:
H4: If the students have a higher concentration when they are participating in the ELAs, their (a) attitude towards and (b) satisfaction with the ELAs will be better.

Perceived control

Perceived control represents participants’ sense of control over their actions when performing the activities (M. Csikszentmihalyi, 1990) and indicates that the participants have an idea of how to respond to the situations they encounter in the activities. If the activity exceeds the participants’ capability, they can lose control of what they are doing and become frustrated. Also, control means participants have a certain degree of autonomy in carrying out the activity. Individuals experience greater enjoyment, motivation, self-esteem, and overall engagement when they perceive themselves to be active, in control, and competent. Students’ learning motivation can be increased by their perceptions of competence and autonomy (Schunk & Zimmerman, 2012). Such motivation is especially important in an introductory level class because the aim of such a class is to provide an overview of the discipline and encourage students to see links between that discipline and others (Ford, Smith, Weissbein, Gully, & Salas, 1998). Thus we propose:

H5: If the students feel more in control of their actions when they are participating in the ELAs, their (a) attitude towards and (b) satisfaction with the ELAs will be better.

Methodology and Results

We developed two different ELAs that had clear goals and included feedback information to balance the challenges provided with the skills of the students. A questionnaire with a 5-point Likert scale (where 1=strongly disagree, 3=neutral, and 5=strongly agree) was developed with appropriate measures for the five aspects of flow described above (perceived challenge, goal clarity, feedback, focused concentration, and perceived control) and the desired learning outcomes (attitude and satisfaction).

The measures for the flow experiences were adopted from a previously validated scale (Guo and Klein, 2009). Students’ attitude was measured using items from the study of Abenza and colleges (2008), and the study of de-Marcos and colleges (2010). Satisfaction was measured using items listed in Sun and Cheng (2007). Students were asked to complete the questionnaire at the end of each experiment. Regression analysis was used to analyze the responses and test each hypothesis.

We also conducted focus group discussions with the students after the ELAs in order to assess how well the activities improved their learning outcomes. Questions included “How well did you enjoy the project as a learning tool?”, “How easy was it to learn IT concepts in this way?”, and “How did you feel about your ability to complete the activities while you were participating in the experiential project?” Two ELAs were designed and implemented for this study and these are described next.

ELA I: Retrieve buried infrastructure facilities using GPS & RFID technologies

Project background information

In the aftermath of a coastal natural disaster such as a hurricane, the storm surge washes large quantities of sand and debris inland. It is, therefore, vital to identify an effective way to digitize utility facilities and store this information, thus helping repair crews to locate and repair a community’s buried infrastructure quickly after a disaster. A Midwestern company has created a tag that incorporates a passive RFID chip in a strong metallic frame capped with a magnet that can be installed alongside individual facility elements. A magnetic locator is used to locate the tags in conjunction with an RFID reader to read the information on the tags, thereby avoiding the need to dig through several feet of sand and debris to retrieve the tags/facilities and identify them. The company collaborated with a university research center to conduct experiments to test the feasibility of using their RFID products, together with GPS, to locate buried facilities. Two alternative means were developed to retrieve information about the buried tags: 1) a GPS system on an Android mobile device, a portable RFID reader, and the magnetic locator; and 2) an RFID reader incorporated into a survey-grade GPS unit and the magnetic locator. The first alternative used a relatively cheap device with a more user-friendly operating system, while the second used a more expensive professional GPS device that required higher skill to operate. The company was interested to
find out the accuracy of retrieval and the time taken to retrieve information on the tags for each alternative. Fifty tags were buried to mark the locations of water utilities in a housing development.

**Project development**

Forty-five students from an introductory IT class participated in the experiment, none of whom had prior experience with the technologies. They learned about the concepts of GPS and RFID as part of the class and used the ELA to further enhance their learning experience. In order to provide students with a clear goal, a presentation was made to explain the experiment and communicate the importance of the ELA. Students were given an hour to finish the whole experiment: 10 minutes of instruction prior to the start of the experiments, and 25 minutes to test each alternative, during which they needed to recover information about eight buried RFID tags without disturbing them. The length of time and the workload assigned were pretested by the research team. During the experiment, a coordinator observed students’ performance and provided feedback and support when problems emerged. Students worked as teams to finish the tasks. In addition, the research team compiled the results of performing the experiment and presented the results to the class in a later class session. The students were asked to reflect on their experiences by preparing a report that listed the advantages, drawbacks, and the business value of the two alternative technology choices. Table 1 lists the objectives of the ELA, the concepts learned, and details of the ELA that was performed.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Concepts Learned</th>
<th>ELA Performed</th>
</tr>
</thead>
</table>
| Retrieve information on utility facilities using GPS & RFID technologies | • GPS Equipment  
• RFID readers and writers  
• Magnetic Locators  
• Use of IT in disaster recovery | • Retrieve information on utility facilities using GPS & RFID tags  
• Record time taken  
• Provide recommendations on alternative technologies |

**Table 1: Description of the Activities Involved in ELA I.**

**Results**

The results of the experiment were valuable to both the company and the students. The company was able to test the reliability of the RFID tags and understand the performance difference between the two different alternatives in locating the tags and was also able to improve and market their products based on these results. The student satisfaction and attitude both scored above 3, indicating that this experiment was indeed a useful means to learn about technologies such as GPS and RFID (Table 2). The values for Cronbach’s Alpha in Table 2 show that the items measuring each construct coalesced well. The mean (>3) and the low standard deviation of the five flow elements indicate that most students agreed that: 1) they received challenge in the activity; 2) they had a good understanding about the goal of the ELA; 3) they received timely feedback; 4) they feel concentrated and 5) in control during the participation. And the mean and standard deviation of the two learning outcome factors indicates that students held a positive attitude and felt satisfied with using such ELA in learning GPS and RFID concepts. The regression results (Table 3) show that all the hypotheses other than H2a, H2b & H3b are supported.

The focus group results reinforced the quantitative results. Students expressed a clear understanding about the goals of the ELA and their role in the activities. They also reported that they enjoyed the ELA and held a very positive attitude towards learning MIS concepts through such an ELA. Comments from the students included:

- “The experiment helped us realize the importance of these technologies in the real world. This focuses our minds on other technologies and concepts in class that may be just as important.”
- “This project makes us find some interesting uses of the IT.”
- “This project brought the in class material and demonstrations together which is much better than just sitting in the classroom and listening to lectures.”
### Flow elements

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived challenge</td>
<td>4.07</td>
<td>0.61</td>
<td>0.69</td>
</tr>
<tr>
<td>Goal clarity</td>
<td>4.02</td>
<td>0.63</td>
<td>0.72</td>
</tr>
<tr>
<td>Feedback</td>
<td>4.10</td>
<td>0.64</td>
<td>0.86</td>
</tr>
<tr>
<td>Focused concentration</td>
<td>3.96</td>
<td>0.87</td>
<td>0.90</td>
</tr>
<tr>
<td>Perceived control</td>
<td>3.89</td>
<td>0.76</td>
<td>0.95</td>
</tr>
</tbody>
</table>

### Learning outcomes

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>3.97</td>
<td>0.69</td>
<td>0.92</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>3.91</td>
<td>0.81</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Scale: 1 – strongly disagree 3- neither agree nor disagree 5- strongly agree

**Table 2: ELA I: Descriptive Statistics and Reliability of the Variables (N=45).**

### Hypotheses

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>β</th>
<th>p-value</th>
<th>β</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Perceived challenge</td>
<td>0.385</td>
<td>0.009</td>
<td>0.379</td>
<td>0.01</td>
</tr>
<tr>
<td>H2: Goal clarity</td>
<td>0.136</td>
<td>Not significant</td>
<td>0.055</td>
<td>Not significant</td>
</tr>
<tr>
<td>H3: Feedback</td>
<td>0.467</td>
<td>0.001</td>
<td>0.244</td>
<td>Not significant</td>
</tr>
<tr>
<td>H4: Focused concentration</td>
<td>0.361</td>
<td>0.015</td>
<td>0.308</td>
<td>0.039</td>
</tr>
<tr>
<td>H5: Perceived control</td>
<td>0.449</td>
<td>0.002</td>
<td>0.494</td>
<td>0.001</td>
</tr>
</tbody>
</table>

**Table 3: ELA I: Regression Results for the Hypotheses Rests (N=45).**

The positive result from this ELA assured us that using flow theory can indeed contribute to the effectiveness of an ELA in improving students’ learning outcomes. In order to test the generalizability of these results, we designed a second ELA, implemented it, and obtained responses.

**ELA II: Map storm drains**

### Project background information

In spring 2014, a different research team from the center designed an ELA to help a city determine the coordinates of its storm drain junctions using a GPS device and map them to a geospatial information system (GIS). The city’s existing information about the storm drains was very outdated and without accurate information concerning these public facilities, the city was unable to take preventive actions during heavy rainfall. It was, therefore, deemed critical to verify and update this data, since developers of new sub-divisions require this type of information when planning new projects and selecting sites. This ELA was conducted in a telecommunications class in which the concepts of GPS, GIS, and wireless communications were part of the learning materials.

### Project development

In order to create a clear goal for the students, the project team developed a presentation prior to the experiment that explained the ELA’s mission and expected outcomes, as well as the students’ role in the data collection process. Students also obtained information about how their activity would be evaluated during the presentation. In addition, the students were shown a training video about the Topcon GPS unit, and 15 minutes of onsite training was provided to familiarize them with the task and the skills needed. Students worked in teams of 2-3 people, and had two hours to collect the GIS and the attribute information about the storm drains in their assigned area. A coordinator evaluated their performance...
and provided feedback and support when problems occurred. After the ELA, each team submitted a report about their understanding of the technology.

Forty-two students worked in 20 teams to conduct the ELA. Students had no previous experience with the technology. During this ELA, they gained hands-on experience with GPS and GIS technologies by interacting with the devices and systems. Table 4 summarizes the objectives, concepts learned, and ELA performed. The data collected was provided to the city to enable the maps of the city’s storm drain system to be updated.

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Concepts Learned</th>
<th>Experiential Projects Performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify and map storm drains using GPS units, and create maps using ArcGIS or Google Maps for the City</td>
<td>• GPS Equipment • ESRI ArcGIS • Google Earth</td>
<td>• Map storm drains using GPS equipment • Measure and record attributes for each storm drain • Provide recommendations on the technology</td>
</tr>
</tbody>
</table>

Table 4: Description of the Activities Involved in ELA II.

Results

Overall, the students mapped 330 storm drains, some of which needed to be repaired, some of which were not marked on the map, and some of which were not even mentioned in the records. The city benefited from this project since it helped digitize the city’s storm drains. The students completed the same questionnaire as in the first ELA and the same procedure was followed to analyze the data. The survey yielded similar results as the first project (Table 5 and Table 6). Most students agreed that the ELA delivered a clear goal and challenged their skill. They also received timely feedback and fell concentrated and in control during the participation. The survey result for learning outcome indicates that students held a positive attitude and felt satisfied with learning GPS and GIS through such ELA. All the hypotheses other than H1a and H1b were supported by the results.

<table>
<thead>
<tr>
<th>Flow elements</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived challenge</td>
<td>4.56</td>
<td>0.51</td>
<td>0.86</td>
</tr>
<tr>
<td>Goal clarity</td>
<td>4.31</td>
<td>0.47</td>
<td>0.80</td>
</tr>
<tr>
<td>Feedback</td>
<td>3.42</td>
<td>0.88</td>
<td>0.90</td>
</tr>
<tr>
<td>Focused concentration</td>
<td>4.11</td>
<td>0.57</td>
<td>0.96</td>
</tr>
<tr>
<td>Perceived control</td>
<td>4.07</td>
<td>0.71</td>
<td>0.84</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>4.05</td>
<td>0.57</td>
<td>0.87</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>3.98</td>
<td>0.87</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Scale: 1 – strongly disagree 3- neither agree nor disagree 5- strongly agree

Table 5. ELA II: Descriptive Statistics and Reliability of the Variables (N=42).
Design Experiential Learning Activities

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>(a) Attitude</th>
<th>(b) Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Perceived challenge</td>
<td>0.12</td>
<td>0.116</td>
</tr>
<tr>
<td>H2: Goal clarity</td>
<td>0.451</td>
<td>0.367</td>
</tr>
<tr>
<td>H3: Feedback</td>
<td>0.321</td>
<td>0.292</td>
</tr>
<tr>
<td>H4: Focused concentration</td>
<td>0.72</td>
<td>0.739</td>
</tr>
<tr>
<td>H5: Perceived control</td>
<td>0.537</td>
<td>0.434</td>
</tr>
</tbody>
</table>

Table 6: ELA II: Regression Results of the Hypotheses Tests (N=42).

The responses to the focus group reinforced the questionnaire results by highlighting the effectiveness of the ELA and students’ very positive attitudes towards using outside class projects to demonstrate IT concepts. Students showed excitement when recalling the ELA and suggested that instructors should include more ELAs of a similar type in different courses in the future. Student comments included:

- “This project makes much more sense in learning.”
- “After this project, I feel more confident in my understanding about GPS.”
- “I never knew that GPS can be used like this and it makes me think more about the application of IT in business.”

Discussion and Recommendations

This research used a widely accepted psychological framework, flow theory, to design and analyze real-world based ELAs (Mackenzie, Son, and Hollenhorst, 2014). The survey results from the two ELAs support the use of flow theory as a theoretical foundation to design ELAs. Most of the flow elements positively predicted students’ perceived learning outcomes and 7 out of the 10 hypotheses in Table 3 and 8 out of the 10 hypotheses in Table 6 had significant results. In ELA I, goal clarity was not found to be a significant predictor of the learning outcomes, whereas in ELA II, challenge was not found to be significant. The variations in these two survey results would be caused by the different ELAs required in the two projects, and different participants as well as instructors involved in the ELAs. In addition, these findings are consistent with previous research that not all flow components are required to create a flow experience (M. Csikszentmihalyi, 1990).

During the focus group interviews, we found that when designing an ELA, it was important to align the challenge that students face in the activity with the skills that they currently possess. In our case, students did not have any previous knowledge of the GPS technologies and only had a limited time to learn to use the equipment. Therefore, the challenge was designed to be reasonable and sufficient training was provided to ensure that all the students had adequate skills to complete the tasks successfully. Otherwise, students may have felt anxious or worried about their performance. These findings also reinforced the need for instructors to explain the significance of the ELA and the need for students to have control over the activity in order to create a positive learning experience.

Last but not least, the survey result from the first ELA project indicates that the incorporation of the five flow elements is useful in design an ELA that improves the students’ attitude and satisfaction toward learning. It also indicates that the steps we used to design the ELA indeed creating the five flow elements for students. The second ELA project follows the same steps in development and delivery of the activities as the first one to understand the generalizability of such design steps. The success of second project confirms the usefulness of those steps, and we developed a flow chart summarizing the process for designing a real-world based ELA when considering the five flow component (Figure 1). This flow chart can be used as a guideline for other instructors who are interested to design a real-world ELA based on flow theory.
Instructors first need to identify a potential ELA that will relate to the class material and then design tasks that will be challenging but not overwhelm the students physically or mentally. The activity needs to be clear and executed within a realistic time limit. In order to test the feasibility of the ELA, it should be pretested prior to the delivery to students. When the ELA is introduced to the class, a presentation is usually needed, including an explanation of the ELA’s goal, the students’ role, the procedure, and the metrics for performance evaluation. Also, the presentation needs to provide necessary practical information and safety precautions to be taken during the ELA. For example, in the two ELAs described here, students needed to work outside so we provided information about the environment and suggestions regarding the weather and the need to wear shoes and long pants. The ELA needs to provide a clear schedule that students can follow, as well as training to make sure students are comfortable participating. Students need to have the freedom to finish the task by themselves, but with supervisors on hand so they can ask for help when needed. The ELA should offer prompt feedback about students’ performance during and after completing the task. After the ELA is finished, students should receive the overall results and complete a related assignment to reinforce what they learned through their participation. The positive outcome of these two ELAs indicates that the incorporation of these steps is useful in implementing an ELA that enhances learning, and improves the students’ attitude and satisfaction toward participating in a class.

Limitations and Conclusion

There are several limitations to this study. The first is that the study involved only two classes in two subject areas, with a total of 87 students. A larger sample of courses and students are needed to determine whether the findings are valid and generalizable. There is also concern that although flow can increase students’ perceived effectiveness of an ELA, its use may not actually enhance their learning outcomes. In this paper, we have not considered learning outcomes such as students’ test grades or the class/program retention (Black and Duhon, 2003; DeShields, Kara, and Kaynak, 2005) because both projects involved only a few concepts from the text book and did not last for a semester. Future studies should include other learning outcomes when evaluate the experiential learning.

In addition, this study studied ELAs from the students’ perspective. It is equally important to understand the ELAs from the perspective of the instructor. Because instructors are responsible for designing and executing all the aforementioned activities in classes, it is critical that they also experience flow during the process and are willing to introduce real-world based projects in their classes. Therefore, we suggest that researchers also consider the flow status of instructors when they study ELAs.

In conclusion, this research proposes a way to systematically create ELAs based on real-world research projects. The study uses two different ELA projects with same design and delivery steps to argue that a
carefully designed ELA considering five flow components (task challenge, goal clarity, feedback, concentration and perceived control) is a useful tool for improving students learning outcomes. We believe the development of other ELAs based on the proposed flow chart has the potential to improve other disciplines in business education.

References


