

Relationships Between “Flow” and Undergraduate Experiences in a College of Agriculture Leadership Course

*Michael W. Everett¹ and Matt R. Raven²
Michigan State University
East Lansing, MI*



Abstract

Leadership courses are considered to be an important curricular component in colleges of agriculture throughout the United States with many of them now offering agricultural leadership majors. Many students entering colleges of agriculture had leadership training experience prior to college through involvement in the National FFA Organization and/or 4-H. However, many did not participate in an organized leadership program. Socio-Psychological measures of “flow” during an undergraduate leadership course were used to determine relationships of undergraduates with and without previous leadership experience. Flow Theory was used to determine relationships between: 1) students’ prior leadership training and number of “flow” experiences; 2) “flow” experiences and intrinsic motivation and engagement; and 3) “flow” and domains of learning in an undergraduate leadership course. There was a positive relationship between “flow” and students within an undergraduate leadership course who had previous exposure to leadership (38.8%). Additionally, undergraduate students were more likely to be in “flow” when participating in activities in the cognitive (39.4%), psychomotor (40.9%) and affective (32.7%) domains of learning. Using the Experience Sampling Method (ESM) to determine “flow” relationships with undergraduate learning expands the current suite of instruments available to understand leadership classroom experiences.

Introduction

Leadership is a highly sought-after and valued commodity in today’s society (Northouse, 2016). Colleges of agriculture faculty have recognized this and as a result, leadership courses and programs are an important component in university agricultural curricula across the United States (Birkenholz and Schumacher, 1994; Velez et al., 2015). Many students entering colleges of agriculture had prior leadership training and experience through involvement in the National FFA Organization and/or 4-H. However, there are also a number of students who did not participate or have access to an organized leadership program like FFA or 4-H. It is important that faculty responsible for leadership

courses and programs understand how future leaders learn and what the optimal learning conditions for undergraduates to develop needed leadership skills are. It is also critical to understand the influence prior experiences have on leadership courses and programs. The National Research Council (2009) has issued a call for post-secondary agricultural curricula and teaching to utilize dynamic approaches to learning for post-secondary students. Approaches suggested by the National Research Council (2009) should leverage experiences that provide students with “real-world” interpretation of ideas, concepts and skills that will in turn create learners and leaders who are successful in their future careers. The socio-psychological concept of “flow” is one theory that has the potential to leverage these “real-world” approaches.

Flow Theory or “flow” is defined as “the holistic sensation that people feel when they act with total involvement” (Csikszentmihalyi, 1975, p. 36). Occurrences of “flow” are often defined as “optimal experiences” or occasions when an individual is fully engaged in an activity (Csikszentmihalyi, 1997). Four components comprise “flow” and provide optimal experiences including being: 1) in control of the experience; 2) attentive during the experience; 3) curious about the experience; and 4) intrinsically interested in performing the experience. Flow Theory includes the symbiotic relationship between perceived challenges of an activity by an individual with respect to skills learned that an individual can apply to the particular challenge (Shernoff et al., 2003). “Flow” research has been cited in the context of secondary (Bassi and Delle Fave, 2004; Shernoff et al., 2003) and post-secondary education (Asakawa, 2010; Askawa, 2004; Everett and Raven, 2015; Rogatko, 2009). However, limited research exists that utilizes “flow” in relation to leadership education in an undergraduate context.

This study draws from previous theory and empirical literature to explore undergraduates in a College of Agriculture and Natural Resources (CANR) leadership course. This study utilizes undergraduate leadership students’ self-reported challenge, skill, interest, enjoy-

¹Academic Specialist, Department of Community Sustainability (Corresponding Author), everettm@msu.edu

²Professor, Department of Community Sustainability, mraven@msu.edu

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ment and happiness during class sessions in an effort to better understand learning and opportunities that create optimal experiences in undergraduate leadership education. Although the focus of this study is undergraduate students in a leadership course, previous research suggests that Flow Theory is applicable to a variety of post-secondary settings (Asakawa, 2010; Asakawa, 2004; Everett and Raven, 2015; Rogatko, 2009). Limited research exists regarding socio-psychological factors that may provide support for understanding relationships of students with previous leadership experiences. However previous research by Everett and Raven (2015) suggest that Flow Theory may have the potential to quantify these dynamic approaches in an educational setting. Everett and Raven utilized the Experience Sampling Method (ESM) to determine if pre-service undergraduate Agriculture, Food and Natural Resources Education (AFNRE) students exhibited "flow" and during what learning activities optimal experiences occurred. They concluded that ESM had the potential to identify optimal learning experiences for undergraduate learning.

The purpose of this study was to utilize Flow Theory and the (ESM) to determine if differences existed in how students with prior leadership experiences perceived leadership compared to students with no prior experience. This study was guided by the following research questions:

1. What was the relationship between students' prior leadership training and the number of "flow" experiences in an undergraduate leadership course?
2. What was the relationship between students' "flow" experiences and intrinsic motivation and engagement?
3. What was the relationship between students' "flow" experiences and domains of learning in an undergraduate course in leadership?

Flow Theory

Vygotsky (1978) operationalized "flow" in the context of learning in terms of "the zone of proximal development." In Vygotsky's definition, the "zone of proximal development" was characterized by providing students with a task that challenges an individual while falling just beyond an individuals' skill level in that activity (1978). The "four-channel model of flow" is generally based on the "zone of proximal development" by the following assumptions: (1) "flow" occurs when perceived challenge and skill are above an individual's personal average; (2) anxiety occurs when perceived challenge is greater than skill; (3) boredom occurs when perceived skills exceed challenge; and (4) apathy occurs when both perceived challenge and skill are below the personal average (Csikszentmihalyi, 1997; Csikszentmihalyi and Csikszentmihalyi, 1988) (Figure 1).

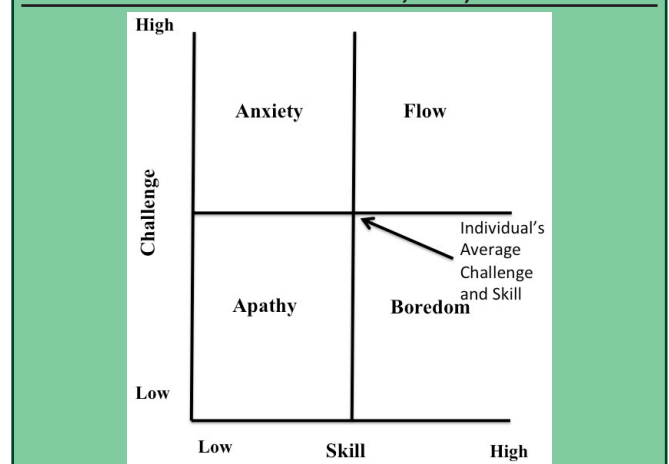
Intrinsic motivation and engagement are key constructs to a student's motivation to learn (Asakawa, 2010; Senge, 1990). Shernoff et al. (2003) defined Flow Theory as a symbiotic relationship between challenges and skills to meet a particular task. "Flow" has

been utilized with college students to understand perceived enjoyment, interest and concentration levels of individuals during specific activities (Asakawa, 2010; Asakawa, 2004; Everett and Raven, 2015; Rogatko, 2009). According to Asakawa (2010), students who experienced "flow" on a regular basis were more likely to be fully engaged in the activity as well as having goals and expectations consistent with learning outcomes. Asakawa (2010) aimed to determine if college students' "flow" experiences led to individuals that do things for their own sake or are intrinsically motivated in their tasks. According to Senge (1990), learning and engagement are strongly associated with intrinsic motivation. Engagement of learners provides the opportunity for learning to occur in a way that achieves success while providing students with an appropriate level of challenge that meets a students' skill level (Shernoff et al., 2003). Intrinsic motivation includes the combined scores of interest, enjoyment and the inverse of wishing you were doing something else (Csikszentmihalyi and Csikszentmihalyi, 1988), whereas engagement scores are calculated based on the amalgamation of concentration, interest and enjoyment scores (Shernoff et al., 2003). The Experience Sampling Method (ESM) is the methodological approach used to measure "flow" (Csikszentmihalyi, 1975) and questions associated with intrinsic motivation (Csikszentmihalyi and Csikszentmihalyi, 1988) and engagement (Shernoff et al., 2003). The ESM provides an enriching and innovative way to implement educational research by enabling the researcher to ask new and interesting questions about how students, teachers and school leadership engage with education while shaping learning and outcomes for success (Zirkel et al., 2015).

Methods

Data were collected at Michigan State University in the fall semester of 2014 in an upper division leadership course. The course is required for all Agriculture, Food and Natural Resources Education (AFNRE) students

Figure 1. The four-channel "flow" model applied to Experience Sampling Method. The origin for the optimal experience is the individual average of challenge and skills. Only when an individual is above that point does "flow" begin (Adapted from Csikszentmihalyi and Csikszentmihalyi, 1988; Massimini and Carli, 1988).



and is an elective for other students across the University. There were 29 undergraduates enrolled in the course and all students participated in the research study. The Experience Sampling Form (ESF) research instrument for this study was a modified version of the ESM (Hektner et al., 2007). The Michigan State University Institutional Review Board deemed this study exempt.

This study used event-contingent sampling (i.e., taking a paper-pencil survey during specific activities over the course of the semester class). Participants were provided with instructions at the first class session by the researcher prior to taking the first ESF survey. At the first class session, participants were provided with a consent form and ESF and asked to fill out the surveys based on a specific event during each class session. Respondents were asked to fill out the ESF one time for each class session. Students were asked demographic information during the first class session and developed a self-selected code that would identify respondents during future ESF surveys. The ESF was designed to elicit information related to participants' demographics (age and gender), whether they had previous leadership experience, whether they held a leadership role within an organization and questions related to "flow" as they were reflecting on the activity (e.g., challenge, skill, interest, happiness, enjoyment and concentration).

For this study, 29 participants completed a total of 330 ESF's, which amounts to a response rate of 81% (14 measured activities x 29 = 406 total potential responses). In an effort to obtain consistent and reliable ESM data, incomplete surveys were not included in the data set for analysis. By comparison, Everett and Raven (2015) had a response rate of 76% for a sample of pre-service undergraduate AFNRE students using the ESM. Thus, the response rate of the present study was deemed acceptable by the researchers.

Respondents were asked to participate by filling out an ESF paper-pencil survey immediately following a specific activity during the course. Activities were categorized and coded into three groups. Each of the teaching activities was coded into either the cognitive, psychomotor, or affective domain of learning (Newcomb et al., 2004). Groupings were based on the definition of each domain of learning as developed by Newcomb et al. (2004) (Table 1).

Dependent Variable.

The dependent measure of "flow" was categorized into four-channels (anxiety, apathy, boredom and "flow") measuring the level of challenge and skill, as well as associated indicators of interest. "Flow" was measured

by the quotient of challenge to skill levels perceived by respondents in the ESF learning activity survey. "Flow" statements were adapted from previous work by Hektner et al. (2007). Responses for both challenge and skill survey items were based on a 5-Point Likert scale ranging from Not at all to Very much. Average challenge and skill levels among respondents were calculated as the intersection of the four constructs in determining whether "flow" was occurring and at what level (Figure 1).

Independent Variables.

The independent variables for this analysis fall into two categories. The first category references demographics questions related to age and gender. The second category of independent variables measured aspects related to previous leadership experiences including the type of organization and any leadership roles held in the organization (e.g., officer, committee chair). A 5-Point Likert scale interval was utilized with this undergraduate sample as a way to simplify options for filling out instrument questions (1 – Not at All to 5 – Very Much) (Hektner et al., 2007).

Data were analyzed using the SPSS 22.0 statistical software package. Descriptive statistics were calculated to determine measures of central tendency for independent variables. Chi-square associations were used to compare "flow" channels, intrinsic motivation, engagement and domains of learning. For the purposes of assessing the four-channel "flow" model data, ESF survey responses were converted to z-scores to control for individual response bias. Challenge and skill survey questions were used to determine channels (i.e., anxiety, apathy, boredom and "flow") within the four-channel model (Csikszentmihalyi and Csikszentmihalyi, 1988; Massimini and Carli, 1988) (Figure 1). Intrinsic motivation was calculated using the composite scores of interest, enjoyment and the inverse of wishing you were doing something else (Csikszentmihalyi and Csikszentmihalyi, 1988), whereas engagement scores were calculated based on composite scores of concentration, interest and enjoyment (Shernoff et al., 2003).

Results and Discussion

The average age of respondents in this study was 22.5 (SD = 8.1) with 62% of respondents indicated having prior experience in leadership. Examples of leadership organizations included: 1) The National FFA Organization; 2) 4-H; 3) Geology Club; 4) National Outdoor Leadership School (NOLS); 5) National Honor Society (NHS); 6) Outdoor or Environmental Club; 7) Sorority/Fraternity; and 8) Student Congress. Additionally, 75% percent of the respondents in this study were female. The average age of respondents with prior leadership experience was 20.1 (SD = 9.6), whereas the average age of students in the course with no prior leadership experience was 26.2 (SD = 11.7). Finally, all students who indicated having prior leadership experience also indicated holding

Table 1. Domains of learning, examples of domains measured, and frequency of stage in an undergraduate leadership course during an Experience Sampling Method (ESM) activity fall semester 2014 (n = 330 responses).

Domain of Learning	Examples	# of Stages
Cognitive	Observation, reflections, assessments	8
Psychomotor	Manipulation of Lego blocks to achieve teamwork	2
Affective	Guest speakers, ethics discussion, trait characterization	4

Note: Data is from *Leadership for Community Sustainability* a 300-level course with 29 students taught in the 2014 fall semester at Michigan State University.

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leadership roles in their respective organizations (e.g., organization officers, committee chairs, regional officers, state officers).

ESM results indicated that of the 330 responses, 39% of the respondents with previous leadership were more likely to be in "flow" than those respondents without prior leadership experiences (35.6%). A chi-square test of independence yielded a small positive, significant relationship between "flow" and leadership experience

Table 2. Relationship between "flow" channels and previous leadership experience of undergraduate leadership students during an Experience Sampling Method (ESM) study (n = 330 responses).

Previous leadership experience	Anxiety	Apathy	Boredom	Flow
No	34 (26.4%)	19 (14.7%)	30 (23.3%)	46 (35.6%)
Yes	32 (15.9%)	52 (25.9%)	39 (19.4%)	78 (38.8%)
$\chi^2 (3, N = 330) = 9.58^*$				
Total Frequency	66	71	69	124

* $p < .05$. ** $p < .01$. Note: Data is from *Leadership for Community Sustainability* a 300-level course with 29 students taught in the 2014 fall semester at Michigan State University.

Table 3. Relationship between "flow" channels, intrinsic motivation, and engagement of undergraduate leadership students (n = 330), students with prior leadership experience (n = 201), and students with no prior leadership experience (n = 129).

	No-Prior Leadership Mean (S.D.)	Prior Leadership Mean (S.D.)	Undergraduate Course Mean (S.D.)
Intrinsic Motivation	3.48 (0.9)	3.57 (1.1)	3.53** (1.0)
Engagement	3.57 (0.8)	3.53 (1.0)	3.72** (0.9)

* $p < .05$. ** $p < .01$. Note: Data is from *Leadership for Community Sustainability* a 300-level course with 29 students taught in the 2014 fall semester at Michigan State University.

Table 4. Relationship between "flow" channels and domains of learning of undergraduate leadership students during an Experience Sampling Method (ESM) study (n = 330 responses).

Flow Channel	Cognitive	Psychomotor	Affective	Total Frequency
<i>Previous Leadership Experience</i>				
Anxiety	19 (16.9%)	6 (21.4%)	7 (11.5%)	32
Apathy	32 (28.6%)	3 (10.7%)	17 (27.9%)	52
Boredom	17 (15.2%)	7 (25.0%)	15 (24.6%)	39
Flow	44 (39.3%)	12 (42.9%)	22 (36.0%)	78
<i>No Prior Leadership Experience</i>				
Anxiety	21 (27.6%)	3 (18.8%)	10 (27.0%)	34
Apathy	10 (13.2%)	4 (25.0%)	5 (13.5%)	19
Boredom	15 (19.7%)	3 (18.8%)	12 (32.5%)	30
Flow	30 (39.5%)	6 (37.4%)	10 (27.0%)	46
<i>All Responses</i>				
Anxiety	40 (21.3%)	9 (20.5%)	17 (17.3%)	66
Apathy	42 (22.3%)	7 (15.9%)	22 (22.4%)	71
Boredom	32 (17.0%)	10 (22.7%)	27 (27.6%)	69
Flow	74 (39.4%)	18 (40.9%)	32 (32.7%)	124

Note: Data is from *Leadership for Community Sustainability* a 300-level course with 29 students taught in the 2014 fall semester at Michigan State University.

$\chi^2 (3, N = 330) = 9.58, p < 0.05$ (Table 2). Respondents with prior leadership experience who were not in the state of "flow" were next most likely to be in a state of apathy (25.9%), whereas respondents without previous leadership experience who were not in "flow" were next most likely to be in a state of anxiety (26.4%) (Table 2).

Results of all participants in an undergraduate leadership course indicated that there was a positive relationship between "flow" channels and intrinsic motivation ($M = 3.53, SD = 1.0$) and engagement ($M = 3.73, SD = 0.9$) (Table 3). A chi-square test of independence yielded a significant relationship between "flow" channels and intrinsic motivation $\chi^2 (12, N = 330) = 33.59, p < 0.01$ and engagement $\chi^2 (12, N = 330) = 46.15, p < 0.01$ (Table 3).

There was no significant relationship between "flow" channels and domains of learning. However, descriptive results indicated that "flow" was the predominant channel among all respondents (Table 4). Among students with prior leadership experience, "flow" was the predominate channel among all domains of learning. Finally, of those respondents with no prior leadership experience, "flow" was the predominate channel for activities in the cognitive and psychomotor domains of learning, however respondents indicated being in the boredom channel more often than any other channel in the affective domain of learning (Table 4).

Summary

Understanding previous student leadership skills and abilities within the context of learning is critical to the development of future leaders (Northouse, 2016). This study aims to add to current "flow" research in an undergraduate setting (Asakawa, 2010, Asakawa, 2004; Everett and Raven, 2015; Rogatko, 2009), established theory (Csikszentmihalyi, 1975) and methodological approaches in the context of education (Zirkel et al., 2015). Results indicated that there was a direct relationship between "flow" channels and students who participated in the undergraduate leadership course. Students with and without prior leadership experience were more likely to be in "flow" than any other channel measured. However, students with previous leadership experience were second most likely to be in a state of boredom. This result indicates that when students were not having optimal experiences they were more likely to be bored. This suggests that consideration should be placed in types of activities that were presented to students and that more challenging activities need to be used with students possessing prior leadership experience in order to assist in student engagement. Additionally, students with no prior experience who were not in a state of "flow" were second most likely to be in a state of anxiety. This result supports the notion that having some prior leadership experience is important to creating "flow" experiences and that classroom learning can be an anxiety-filled time in one's life, especially with no prior background in

the topic of study (Everett and Raven, 2015). A potential strategy would be to use students with prior leadership experience to act as in-class mentors to those who did not have prior experience. This strategy might lead to decreasing the boredom of students with leadership experience while at the same time decreasing the anxiety of students without prior experience. This research also supports the results of Everett and Raven (2015) that engaging leadership activities can be a forum for creating a continuum for numerous optimal experiences.

Second, there was a significant relationship between "flow" channels and intrinsic motivation and engagement when comparing all undergraduate student respondents both with and without prior leadership experience. Overall, students in "flow" were also likely to be intrinsically motivated to learn for the sake of learning and not being interested in tangible aspects such as a grades or another type of reward. This result supports the work of Asakawa (2010) in that being intrinsically motivated to learn is critical to the educational process. Additionally, students in "flow" were also likely to be engaged in the learning process. This supports research conducted by Senge (1990) that engagement in learning is important to a students' intrinsic motivation to learn.

Finally, there were no direct relationships between "flow" and domains of learning among all respondents. However, students with prior leadership experience were more likely to be in "flow" than any other channel when participating in activities in the cognitive, psychomotor and affective domains of learning. These results suggest that students with prior leadership experience had "flow" experiences under a variety of learning environments. This supports the work of Newcomb et al. (2004) that providing instruction in a variety of domains will increase the overall efficacy of the learning experience as well as provide a broader range of opportunities for growth. More research is needed to determine if instruction in only one domain decreases "flow" experiences.

This study suggests that faculty teaching leadership courses in Colleges of Agriculture and Natural Resources (CANR) should consider employment of a variety of learning experiences within all domains of learning in an effort to provide "flow" experiences for all students. This study also suggests that faculty should be cognizant of student interest and knowledge levels with individuals who have no prior leadership experience in an undergraduate leadership course. These levels of boredom or anxiety may be due to having a limited understanding of leadership and consequently not being successful in a leadership course. Application of the ESM approach in this study has the potential to be applied in other classroom settings, however caution should be used. A limitation to this study was the number of respondents (n = 29). Larger and more diverse undergraduate courses would provide additional opportunities to apply this methodological approach.

In conclusion, results of this study suggest that important relationships exist between "flow," intrinsic

motivation and engagement of undergraduates in a leadership course in the CANR at Michigan State University. This research sought to better understand if previous leadership experiences in FFA and 4-H make a difference in an undergraduate student's intrinsic motivation and engagement in a leadership course. This study differed from previous work by Everett and Raven (2015) by focusing on undergraduate leadership students and application of Flow Theory in the context of previous leadership learning experiences and application based on domains of learning (Newcomb et al., 2004). Results of this research provide CANR faculty with baseline information about classroom activities that provide "flow" or optimal experiences in the context of learning in an undergraduate leadership course. The results of this study indicate that instructors should be cognizant of students with previous leadership experiences as it impacts their engagement, intrinsic motivation and most importantly "flow" in leadership learning and development. This research also provides a framework for application in other agriculture and natural resource undergraduate programs and courses.

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