2011

Making Youtube and Facebook Videos: Gender Differences in Online Video Creation Among First-Year Undergraduate Students Attending a Highly Selective Research University

Anu Vedantham
University of Pennsylvania, avedan@gmail.com

Vedantham, A. (2011). *Making Youtube and Facebook Videos: Gender Differences in Online Video Creation Among First-Year Undergraduate Students Attending a Highly Selective Research University.* (Doctoral dissertation). University of Pennsylvania Graduate School of Education.

Making Youtube and Facebook Videos: Gender Differences in Online Video Creation Among First-Year Undergraduate Students Attending a Highly Selective Research University

Abstract
Online video creation for YouTube and Facebook is a newly popular activity for college students. Women have explored social networking technologies at about the same level as men, but have expressed less interest in computer programming and multimedia design. Online video creation includes aspects of both social networking and programming / multimedia design and provides an interesting forum for examining gender-related differences. This mixed methods study uses questionnaire data from 31% of the population of first year students attending a highly selective research university. The study explores how online video creation varies by gender after incorporating theoretical concepts of confidence, self-efficacy, attitudes toward computers, perceived ease of use, perceived usefulness, social influence and demographic variables such as socioeconomic status, ethnicity, immigrant status and high school size. The theories of self-efficacy (Bandura), stereotype threat (Steele) and learned helplessness (Abramson) and the Technology Acceptance Model (TAM) inform the conceptual framework. Using descriptive and multivariate regression analyses as well as qualitative inquiry, the study finds significant gender differences in creation of online videos and roles played with video editing. Men report more participation in video creation and editing, as well as more participation in creating videos for required school projects, a notable finding for policy and practice. Attitudes toward computers and TAM explain observed gender differences. The Mac computer platform is associated with greater likelihood of video creation. Study results inform academic support interventions to promote media literacy, computer confidence and consistent perceptions of ease of use of video technologies for all students.

Keywords
gender, video, technology, online, confidence, Facebook, YouTube, learned helplessness, stereotype threat, Technology Acceptance Model

Disciplines
Higher Education Administration | Higher Education and Teaching | Science and Technology Studies | Secondary Education and Teaching

Comments
Vedantham, A. (2011). *Making Youtube and Facebook Videos: Gender Differences in Online Video Creation Among First-Year Undergraduate Students Attending a Highly Selective Research University.* (Doctoral dissertation). University of Pennsylvania Graduate School of Education.

MAKING YOUTUBE AND FACEBOOK VIDEOS: GENDER DIFFERENCES IN ONLINE VIDEO CREATION AMONG FIRST-YEAR UNDERGRADUATE STUDENTS ATTENDING A HIGHLY SELECTIVE RESEARCH UNIVERSITY

Anuradha Vedantham

A DISSERTATION

In

EDUCATION

Presented to the Faculties of the University of Pennsylvania
in Partial Fulfillment of the Requirements for the

Degree of Doctor of Education

2011

Supervisor of Dissertation:

____

Laura W. Perna, Professor of Education

Dean, Graduate School of Education:

____

Andrew C. Porter, Dean

Dissertation Committee:

Laura W. Perna, Professor of Education, University of Pennsylvania

Joni Finney, Professor of Education, University of Pennsylvania

Yasmin Kafai, Professor of Education, University of Pennsylvania

Making Youtube and Facebook Videos: Gender Differences in Online Video Creation Among First-Year Undergraduate Students Attending a Highly Selective Research University

DEDICATION

This dissertation is dedicated to my husband Renga Iyer. I was a graduate student when we met in 1990 and I am a graduate student today. Thank you for your unswerving love and infinite patience with the twists and turns of my professional life over our 21 years together.

ACKNOWLEGMENTS

Completing this dissertation at age 43, I am keenly aware of the many small happenings that led me here, and the crucial, timely assistance of so many people. As a freshman entering college, I could not have predicted that I would complete a doctorate in higher education focused on freshman experiences. Writing these acknowledgments has led me to reflect on the five years spent on this dissertation and the two decades that led me here. This dissertation would not have been possible without the guidance of my advisor and committee, the support of my colleagues, mentors and collaborators and the affection of my husband, children, extended family and friends.

I begin with my thanks to Laura Perna, my dissertation advisor. Laura has dedicated many hours to helping me improve my thinking and writing. She has patiently read so many drafts. Her careful, skilful feedback lies behind almost every paragraph. She guided me from the first principles involved in this study, and provided me with affectionate, caring support through several semesters when I struggled to narrow my topic and craft my research questions. She set high standards for me to meet.

I thank Joni Finney and Yasmin Kafai, my committee members for this dissertation. I have had the privilege to attend graduate courses from both of them, learning about education policy, college funding and youth culture. Joni provided crucial policy context for my work. Yasmin guided me to understand implicit assumptions on gender roles. Both took time to share ideas, and clarified my thinking and writing.

The idea for this dissertation began through first-hand observation of undergraduates in the Weigle Information Commons at Penn Libraries. Many Penn faculty, staff and students have guided my research methodology, instrument design and data collection. During my coursework phase, Marybeth Gasman's laughter and warmth lightened my dissertation journey and Warren Ewens' emphasis on mathematical principles made statistics meaningful. I created the first draft for the questionnaire for Tim Victor's survey design course. Conversations with Myrna Cohen and Janet Tighe helped me plan data collection. Chia-ying Pan helped me with APA citation style.

Joan Lippincott at the Coalition for Networked Information and Lawrence Johnson from the New Media Consortium provided national perspectives and suggestions for my questionnaire. Samantha Morris shared the ATCUS v2.0 instrument and Chyan Yang shared a YouTube questionnaire; both documents improved my questionnaire.

Kyle Stephens guided me through Institutional Review Board approvals; Anne Tiao and Anita Mastroieni helped me prepare materials for review. Paul Rozin met with me several times to guide my design process, mentor me through the proposal process, improve my questionnaire and help me with pilot tests. Nathan Ensmenger guided me through a wonderful discussion of gender roles and technology. Rebecca Stein helped me improve my methodology for collecting information on gender, ethnicity and immigrant status. Julie Lyzinski and Stacey Lopez helped me design effective questions on demographics. Discussions with Andrew Lamas, Matt Waller, Amy Hillier and Carolyn Cannuscio helped clarify my thinking. Manisha Joshi and Susan Sorenson provided excellent suggestions for incentives and outreach that helped me expand my dataset.

Data collection was a large component of this dissertation. Janet Ansert provided invaluable assistance with my random sample. Stephanie Weaver, Trish Williams, Tsitsi Jaji, Alison Lalond Wyant and April Herring helped me reach out to students at dormitories. Rebecca Stein, Peter Decherney, Nathan Ensmenger, Patrick Wehner, Jacqui

Sadashige and Sue Weber helped me reach out to students through courses. Christina Costanzo Clark, Janet Tighe and Michele Grab helped me reach out to students through schools. Marjorie Hassen, Myrna Cohen and Karlene Burrell-McRae helped me reach out to students through events. Haftom Khasai and Matt Amalfitano helped me reach out to students informally. My deep appreciation goes to the large number of students who completed questionnaires and attended discussion sessions.

John Marcotte, Rumi Morishima and Mike Halperin helped me with survey software and statistical analysis. Warren Ewens guided my data analysis and Pete Kimchuk inspired me through the home stretch of writing.

At the Penn Graduate School of Education (GSE), Karen Carter and Billie Meeks helped me navigate the dissertation process, and Lois MacNamara guided me with tricky aspects of the degree requirements. I could not have persevered without the encouragement of several classmates including Karlene Burrell-McRae, Rachel Fester, Kim Guyer, Valerie Lundy-Wagner, Julie Vultaggio, Meghan Wilson, Alison Lalond Wyant, Erin Walsh and Alyssa D'Alconzo.

At Penn Libraries, I am especially grateful to my supervisor Marjorie Hassen for providing me with the flexibility and support I needed to complete this research while working fulltime. I thank Ancil George for his encouragement, Radha Natarajan for her many kindnesses, and Patty Lynn for her expert guidance with my literature review. The generosity and visionary support of David B. Weigle has been essential to my work life.

Several mentors have guided me earlier in life and helped me to reach this milestone. Barbara O'Breza, my English teacher during junior year of high school, was the first to recognize and encourage my interest in writing. Gary Hayward, my masters'

research supervisor at Bell Communications Research in 1989 taught me to value visual representation of research findings. Several faculty members at the Woodrow Wilson School at Princeton University helped me venture outside my self-imposed electrical engineering box including Frank von Hippel, Richard Falk and John DiIulio (who is now at Penn). Ann Corwin has been my shoulder to lean on again and again.

Michael Oppenheimer, formerly of the Environmental Defense Fund and now at Princeton, has been my mentor since 1992. He has taught me much about the patience and carefulness needed for good research, and about the courage to stick by surprising results. His advice to me in 1996 not to limit my own horizons still rings in my ears.

Laura Breeden at the U.S. Department of Commerce has been a source of strength for me since 1994 and guided my first peer-reviewed article. Harvey Kesselman at the Richard Stockton College of New Jersey taught me about strategic thinking and persistence. Judith Destefano-Anen at Stafford Township School District was the first person to plant in me the idea of a doctorate in education. My close friend, the late Paul Lyons, led me to the University of Pennsylvania – both to Penn Libraries and to GSE.

There are so many people to thank on the home front. My husband Renga Iyer, my daughter Sumun and my son Pranav have cheered me up, kept me going, adjusted to my moods and understood my need to spend hours on end chained to my laptop. They have listened patiently to me through the difficulties of data collection, and shown great patience with my intense schedule. My parents Mr. Srinivasa and Mrs. Lilly Vedantham have inspired me to work hard and continue my graduate studies. Their love and support have helped me throughout; this is their accomplishment as much as it is mine. Our close friends, Frank Cerreto and Jung Lee, Melaku and Roman Lakew and the incomparable

Penny Dugan, have kept me laughing and hopeful. Mr. and Mrs. Uma Ramanathan, our neighbors and family friends, have helped me juggle graduate school, work and home. My best friend Anjali Arora Saini has been by my side, helping me to stay sensible.

My brother Kumar Vedantham and his lovely wife Rebecca Hernandez have supported me from the west coast. My late father-in-law Mr. P. V. Ganesan and my mother-in-law Sita Ganesan have given me so much love and affection over the years. I treasure them and my large extended family in India. My good fortune is that some of my extended family is now closer geographically, especially my darling grand-nephew Vihaan Iyer, just three years old and full of life.

There is no way to express fully my gratitude to all the people mentioned above. This dissertation would not have been possible without their assistance. Of course, any and all errors or shortcomings in this dissertation are mine alone.

ABSTRACT

MAKING YOUTUBE AND FACEBOOK VIDEOS: GENDER DIFFERENCES IN ONLINE VIDEO CREATION AMONG FIRST-YEAR UNDERGRADUATE STUDENTS ATTENDING A HIGHLY SELECTIVE RESEARCH UNIVERSITY

Anuradha Vedantham

Supervised by: Laura W. Perna, Ph.D.

Online video creation for YouTube and Facebook is a newly popular activity for college students. Creating online videos has been made easier by development of small cameras, video compression, high-speed Internet and online storage. Women have explored social networking technologies at about the same level as men, but have expressed less interest in computer programming and multimedia design. Online video creation includes aspects of both social networking and programming / multimedia design; it provides an interesting hybrid forum for examining gender-related differences. This mixed methods study uses questionnaire data from 31% of the population of first-year students attending a highly selective research university. The study explores how online video creation varies by gender after incorporating theoretical concepts of confidence, self-efficacy, attitudes toward computers, perceived ease of use, perceived usefulness, social influence and demographic variables such as socioeconomic status, ethnicity, immigrant status and high school size. The theories of self-efficacy (Bandura), stereotype threat (Steele) and learned helplessness (Abramson) and the Technology Acceptance Model (TAM) inform the conceptual framework. The study examines whether gender affects the relationship between computer confidence and online video creation. The study uses descriptive (e.g., analysis of variance) and multivariate (e.g., regression) analyses as well as qualitative inquiry using focus groups and interviews.

The study finds significant gender differences in creation of online videos and roles played with video editing. Men report more participation in video creation and editing. Men report more participation in creating videos for required school projects, a finding of concern for policymakers and practitioners. Attitudes toward computers and TAM explain observed gender differences. The Mac computer platform is associated with greater likelihood of video creation. Qualitative inquiry suggests that humorous videos are primarily viewed as created by men and women are less willing to spend available leisure time on video creation. Study results inform academic support interventions to promote media literacy, computer confidence and consistent perceptions of ease of use of video technologies for all students.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: Introduction

Computer use in the United States is gendered in complex ways, with women demonstrating different preferences than men for specific activities, starting with video game choices in early childhood (Pinkard, 2005), progressing through online activity during teenage and college years (Pryor & Hurtado, 2008), and ultimately affecting career choices (Ahuja, 2002). Women have traditionally been severely underrepresented in the fields of computer programming and multimedia design, a trend with negative economic consequences (Camp, 1997; Cohoon & Aspray, 2006), but are increasingly achieving parity in some areas of computer use such as social networking (Ellison, Steinfield & Lampe, 2006). Improvements in ease-of-use and reductions in cost of computer technology are reducing traditional gender gaps (Imhof, Vollmeyer, & Beierlein, 2007).

Online video creation, an activity that became popular with undergraduate college students just since 2006 (Gannes, 2009), provides an interesting forum for looking at gender effects because it combines some aspects of computer programming / multimedia design with some aspects of social networking. Little published research exists on the new activity of online video creation so this study depends on review of earlier literature on the underrepresentation of women in science, technology, engineering and mathematics (STEM) fields, especially in the sub-category of Computer Science Engineering (CSE). The study also considers research in the areas of technology adoption, workplace computer use, computer programming, social networking and video game design, and draws substantially from social science theories of gender, self-efficacy and social influence.

Bandura's theoretical construct of "self-efficacy" (Bandura, 1997), defined as belief in one's own capability to successfully perform a particular task (Cassidy & Eachus, 2002), provides a foundation for examining gender-specific attitudes to computing. Theoretical models about technology acceptance, role models, stereotype threat and learned helplessness provide additional insight into gender differences in online video creation. This study examines gender differences in mastery of online video creation among freshmen attending one highly selective research university during the time period from September to December 2010 using statistical analysis of questionnaire data and qualitative analysis of data collected via interviews.

Gendered choices on video skills, computer use have economic impact

As Colley (2003) describes, "girls approach computers as tools for accomplishing tasks, while boys approach them as technology for play and mastery" (p. 1). Adults likewise show gendered differences in type of computer use. Only one of every five video game designers in the United States is female (Pinkard, 2005), but one of every two users of social networking software such as Facebook and My Space is female (Ellison et al., 2006). Five of every six data entry clerks in the United Kingdom are female and similar patterns are found in the United States (Ahuja, 2002). Women are not attracted to "particular kinds of computing, discursively associated with masculinity" (Clegg & Trayhurn, 1999, p. 77).

Gendered choice of computer-related careers affects the earning potential and economic status of women. Average annual salaries in 2004 dollars for multimedia design careers starting immediately after graduation from college were substantially higher than the $35,214 earned by the average college graduate, with a video game designer earning $42,901, a 3D artist earning $45,771 and a programmer earning $60,152 (Crandall & Sidak, 2006). The career potential for college graduates with video creation skills continues to be strong. The 2010 Career Guide to Industries on the Bureau of Labor Statistics website describes the benefits of careers in the motion picture and video industries by stating, “Computer specialists, multimedia artists and animators, film and video editors, and others skilled in digital filming, editing, and computer-generated imaging should have the best job prospects” (Bureau of Labor Statistics, 2009).

Concerns about underrepresentation of women in technology-intensive professions have resulted in substantial investment of public and private funds in the United States in programs that encourage young women to consider careers in STEM (science, technology engineering and mathematics). Studies show a narrowing of gender gaps in several STEM disciplines, but substantial gender gaps persist in Computer Science and Engineering (CSE) as Cohoon and Aspray (2006) document in their book *Women and Information Technology*. Some aspects of editing video for posting online closely mirror the skill levels and steep learning curves (Johnson & Johnson, 2004) involved in computer programming that forms a core aspect of CSE.

The fast pace of change in information technology necessitates periodic re-examination of gendered computing choices. Improvements in camera, storage and computing technologies have reduced cost and increased ease of video creation substantially over the past decade (Gannes, 2009). In October 2009, 68.7% of U.S. households had Internet access and 63.5% had broadband access (which speeds video uploads), levels that are 25% higher than just two years earlier (NTIA, 2010). Individuals in the Millennial Generation (MG), defined as individuals born after the early

1980's (Strauss & Howe, 1991), increasingly use video sources for daily information, education and entertainment (Gannes, 2009). Online video sites such as YouTube are changing patterns of use and creation of both personal and professional content (Gannes, 2009). A national survey conducted in 2008 found that 25% of middle and high school students had posted a video online (Rideout, Foehr, & Roberts, 2010). Madden (2009) reports, from the Pew Internet and American Life Project, widespread and regular consumption of online video by young adults ages 18 to 29, with 89% watching videos online and 36% watching such videos on a daily basis. Use of online video sites nationwide has doubled from 2006 to 2009 and has outpaced other technologies such as social media (Madden, 2009). Video is increasingly integrated in disciplines and careers traditionally attractive to women such as interior design, real estate sales and culinary arts (Gannes, 2009).

Increased Student Dependence on Internet Access and Computers

Until very recently, video creation was not widely feasible by college students on laptop or personal computers due to the costs and computing power required (Gannes, 2009). Statistics on online video creation by college students are not yet collected nationally but statistics on similarly computing-intensive activities such as computer programming, video game design and multimedia design provide some insight into trends that are likely to also be relevant to online video creation.

Today's college freshmen use computers and the Internet with greater intensity than in previous decades (Pryor, Hurtado, Saenz, Santos, & Korn, 2007). Women display significantly less interest than men in some aspects of computer use, but in other areas gender gaps are not obvious (Pryor et al., 2007).

Today's freshmen do not differ substantially from counterparts in earlier decades in their study of computer science. The Higher Education Research Institute (HERI) has provided an annual national description of freshmen since 1966 using the Cooperative Institutional Research Program (CIRP) Freshman Survey. CIRP data show that the percentage of women completing a half-year or more of computer science in high school increased from 50% in 1984 to 57% in 2006; during this time, the percentage of men also increased from 61% to 67% (Pryor et al., 2007). More recent data show a small decline from 62% in 2004 to 61% in 2008 of the percentage of freshmen completing a half-year or more of computer science in high school (Pryor & Hurtado, 2008).

Today's freshmen use computers much more intensely than their counterparts in earlier decades. The CIRP data referenced earlier show that the percent of women reporting frequent use of a personal computer has more than tripled in 20 years rising from 24% in 1985 to 86% in 2005, with a similar trend for men (Pryor et al., 2007). Colley and Comber (2003) found further that upper-level secondary school students in the United Kingdom exhibit a narrowing of gender gaps in general computer use since the 1990s.

The pervasiveness of the Internet in the lives of today's freshmen is striking. Fully 99% of college freshmen report conducting online research during high school (Pryor & Hurtado, 2008). About 57% of the students reported reading blogs and 34.5% reported writing blogs frequently or occasionally during high school (Pryor & Hurtado, 2008). Those who wrote blogs frequently almost always also reported reading others' blogs frequently. One surprise in the 2008 dataset is that, for both blog reading and blog writing, minority groups and women are now more active than white males. Women are more likely than men to conduct research on the Internet (81% to 70%), read blogs (27% to 23%) and write blogs (16.5% to 12%) (Pryor & Hurtado, 2008).

Family income is positively related to residential access to broadband Internet, a service that facilitates online video creation during high school and for college students who do not live on campus. As of October 2009, home access to broadband Internet differs sharply by socioeconomic status, with 30% of families making less than $15,000 a year and 89% of families making more than $150,000 a year having such access (NTIA, 2010); broadband Internet access also differs significantly by household ethnicity, with Asian Americans at 67%, White Non-Hispanics at 66%, Black Non-Hispanics at 46% and Hispanics at 43% (NTIA, 2010). Despite these gaps across demographic categories, all these statistics show substantial increase from October 2007 to October 2009 (NTIA, 2010).

Use of social networking sites and e-mail by college students is largely gender-neutral. Facebook participation includes the vast majority of college students, and its use shows no substantive difference by gender, ethnicity or socio-economic status (Ellison et al., 2006). Results from the National Survey on Student Engagement (NSSE) indicate that most undergraduates use information technology for educational purposes, and such use has positive impact on educational outcomes and engagement with college activities (Nelson Laird & Kuh, 2005).

For college freshmen, career interest in engineering – a field historically associated with technology skills including computer programming - continues to have a persistent gender differential. A much higher percentage of male college freshmen (17%) report an interest in majoring in engineering compared to just three percent of women

(Pryor & Hurtado, 2008). Similarly, 13% of men are considering engineering careers compared to 2.5% of women, although the percentage of women interested in engineering has increased slightly over the last few years (Pryor & Hurtado, 2008).

Mastering the use of video as a communication medium is increasingly recognized as an essential component for K-12 and higher education. In March 2010, the National Governors Association (NGA) and the Council of Chief State School Officers (CCSSO) issued a draft document as part of the Common Core State Standards Initiative (CCSSI) for all K-12 students, with the standard (numbered 7 in their list): "Synthesize and apply information presented in diverse ways (e.g., through words, images, graphs, and video) in print and digital sources in order to answer questions, solve problems, or compare modes of presentation" (National Governors Association, 2010). This draft standard builds on the English and Language Arts standards issued by the College Board (2006) which include explicit language on creation of videos, in addition to viewing and critiquing video content. The College Board's third standard under the Media Literacy section titled "Composing and Producing Media Communication" contains three objectives:

> M3.1 Student analyzes purpose, audience, and media channel when planning for a media communication. M3.2 Student develops and produces an informational or creative media communication. M3.3 Student evaluates and revises a media communication (p. 181).

This standards document then provides a detailed rubric to assess student comfort level with creation of video content including ability to handle the video recording devices and editing software involved (The College Board, 2006).

Aspects of Multimedia Design and Social Networking

This study focuses on online video creation (for posting on YouTube, Facebook, etc.), a narrow use of technology that can require skills similar to computer programming and multimedia design (Larraga & Coleman, 2007), but also incorporates strong elements of social networking (Gannes, 2009). College students create videos with multiple, sometimes contradictory goals where some of their videos are designed to attract attention from a large audience while other videos record personal or private moments for a pre-selected audience (Molyneaux, O'Donnell, Gibson, & Singer, 2008). Students often use Facebook, YouTube, iTunes and other social networking platforms to share their creations (Gannes, 2009). Online video viewing has become popular over the past five years and is increasingly becoming a common means of communication and expression. YouTube traffic in the United States grew from less than 10 million in early 2006 to more than 85 million within just two years (Gannes, 2009).

Online video creation requires a different skill-set from video viewing. The creator of a video exercises a level of mastery and control over the technology of production; in contrast, the viewer of a video can have a remarkably passive role. Video creation depends on newer software and hardware (Johnson & Johnson, 2004), which is updated about every 12 to 18 months by the software manufacturers (Adobe, 2010; Apple, 2010).

Online video can range from a quick upload from a mobile phone of an activity shortly after it happens to a carefully produced video that combines, edits and "mashes up" content from multiple sources. The first requires minimal planning and technological expertise, while the second can require substantial investment of time, learning and collaboration. Turning a cell-phone on record mode and sending the results to YouTube is a minor, casual act for today's freshmen and self-efficacy is unlikely to be an important factor in such videos; the importance of self-efficacy has been shown to be reduced in situations where the tasks are perceived to be simple or easy (Busch, 1995).

Videos that include audio edits, overlay tracks, transitions and timing effects on the other hand are the product of sustained and repeated effort; self-efficacy is likely to affect both the decision to start on such a project and the dedication required to finish and post the completed video. Individuals often learn sophisticated video-editing software through self-paced exploration. Several trade publications and research studies describe the steep learning curve associated with video-editing software used by professional video creators such as Adobe Premiere and Apple Final Cut Pro (Corl, Johnson, Rowell, & Fishman, 2008; Johnson & Johnson, 2004), as well as the process of distinguishing between software options (Larraga & Coleman, 2007). Lukinbeal et al. (2007) describe the learning curve for Final Cut Pro as "too high without expert assistance" (p. 41) and also describe the substantial time commitment required.

The structure of online video sites makes it exceptionally difficult to gauge the gender, ethnicity, socioeconomic status, geographical location or other aspects of the video creators. Creating an online video posting account requires only the creation of a web-based email address, and each individual can have multiple video posting accounts under arbitrary screen names (Molyneaux et al., 2008). Although many online videos are casual creations of limited or short-term value, the intense use of online video by Americans on a daily basis (Madden 2009) raises questions about those whose voices may not be fully reflected in this new medium. The creation of an online video is generally a leisure activity (Gannes, 2009) and the substantial time commitment often involved (Johnson & Johnson, 2004) emphasizes the role of agency in individual decision-making regarding the creation of online video.

This study collects self-reported data from students on creation of all types of online videos, with explicit differentiation of casual and sophisticated video creation as explained in Chapter 3. As described in Chapter 2, some data have been published on YouTube video-viewing habits of college students but there is little published information about who, among college students, creates video for YouTube, iTunes, Facebook, etc. or the gender-related aspects of such video creation. This study aims to address that gap in the current literature.

Overview of the Study

This study examines the relationships between gender and the mastery of online video creation among freshmen attending a highly selective research university. The study draws on prior research on gender differences in choices and performance on computer programming, multimedia design and social networking (Camp, 1997; Colley, 2003; Ellison et al., 2006), while recognizing that online video creation in 2010 has some unusual characteristics in that it combines aspects of computer programming and social networking. Online video creation activities are in a period of rapid growth and transition. Historically, women have participated in computer programming and multimedia design fields less frequently than men (Aspray and Cohoon, 2006; Camp, 1997; Mitra et al., 2000) but they have participated on par with men in social networking (Ellison et al., 2006). This study examines where the new activity of online video creation enabled by websites such as YouTube, Facebook and iTunes falls on this continuum.

Using a conceptual framework that draws from several theoretical perspectives, the research questions address gender differences in mastery of online video creation after controlling for demographic and situational factors identified as relevant by prior studies. This study analyzes questionnaire data collected from freshman attending a highly selective research university using regression and descriptive statistical methods and includes a small qualitative inquiry component. The study aims to provide better understanding of gender differences in online video creation in order to inform college interventions that may encourage women to consider majors and careers that build on video creation skills and lead to economic benefits in terms of salaries and job security.

CHAPTER 2: Review of Prior Research

This chapter begins by describing the four relevant theoretical frameworks used in this study and reviewing studies that use these frameworks to examine topics similar to online video creation. Then research on the possible impact training can have on confidence with technology use is reviewed. Gender differences in online video creation and consumption are discussed, followed by studies that look at the relationship between gender and confidence and mastery of technology. Finally, research examining the effects of other demographics characteristics – ethnicity, socioeconomic status, family context, and high school preparation – on self-efficacy and mastery of technology is discussed.

In order to maintain relevancy, the review concentrates on technology-use studies published since the year 2000 with attention to a few studies published in the previous decade; a few older studies also inform the theoretical perspectives discussed. Much recent research on online video creation has been conducted in South Asia – in China, Hong Kong and Taiwan in particular. Some relevant computer use studies have been conducted in Europe and Australia. When possible, the discussion provides details on the population under study and comments on generalizability to a United States college-age population.

Relevant Theoretical Frameworks

Studies examining underrepresentation of women in computing-intensive fields have drawn on theories from social psychology, sociology and women's studies (Cohoon & Aspray, 2006). Wajcman (2000) argues that new computing applications consistently replicate existing gendered social structures. Others see changes in usage by gender as new applications become increasingly easier to use, reducing barriers to access (Venkatesh, Morris, Gordon & Davis, 2003).

Two of the four theoretical frameworks that inform this study broadly address technology adoption processes: self-efficacy theory (Bandura, 1997) and TAM (Davis, 1989; Venkatesh, et al., 2003; Yang, Hsu, & Tan, 2009). The studies reviewed in these two frameworks consider required use of technology, such as in the workplace (Venkatesh et al., 2003), as well as voluntary use of technology, such as for leisure pursuits (Yang et al., 2009); the latter is of more relevance to the current study. The other two theoretical frameworks have focused on gender specifically; they are stereotype threat theory (Steele & Aronson, 1995) and learned helplessness theory (Abramson, Seligman, & Teasdale, 1978).

Self-Efficacy theory.

The first guiding perspective for this study is self-efficacy theory. According to Albert Bandura (1997), "Perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). This definition has been tested and modified by hundreds of studies in a wide range of disciplines. Google Scholar lists over 13,000 citations of Bandura's 1997 book Self-Efficacy: The Exercise of Control as of January 30, 2010 (*Google Scholar,* 2010), an impressive number even when allowing for the presence of some duplicate listings. Bandura emphasizes the role of human agency, where people exercise influence over their own behavior to take actions that they believe will lead to particular consequences. His theory describes the personal, behavioral and social factors that lead a person to undertake a particular action. He differentiates self-efficacy from self-esteem, emphasizing the role self-efficacy plays in helping individuals to be more ambitious and set high standards and sometimes unachievable goals for themselves. He describes 'proxy control' where an individual might prefer to let someone else do a task because they are not confident in their own ability to do that task successfully, a concept that complements the learned helplessness theory discussed later in this section (Bandura, 1997).

Bandura (1997) states, "Where performance determines outcome, efficacy beliefs account for most of the variance in expected outcomes," (p. 24) and cites a large number of supporting studies. In the context of online video creation, the high reliability and ease of use of sharing sites such as YouTube (Gannes, 2009) guarantees that performance (e.g., making and uploading the video) determines outcome (e.g., having your video available to be seen by the general public or a preselected friend circle). There are few gatekeeper aspects in the United States (with the important exceptions of copyright infringement and adult content) to restrict the publication of a video. Unlike a juried show or a corporate-controlled media outlet, a mass publishing system like YouTube strengthens the relationship between performance and outcome, and would therefore be appropriate for study under self-efficacy theory.

In the context of computer use and gender studies, self-efficacy theory has informed studies of how people master new software (Beyer, 1994; Busch, 1995). Zeldin and Pajares (2000) conducted narrative analysis on interviews with 15 women with successful careers in mathematics, science, and technology and found results consistent with predictions from self-efficacy. Self-efficacy theory becomes more relevant as the complexity and/or perceived difficulty of a task increases; effective execution of a task that is considered simple or quick depends less on one's perception of one's own ability to complete that task effectively (Bandura, 1997).

Several researchers use the constructs of self-efficacy and confidence interchangeably; this dissertation primarily uses the term 'confidence' to maintain consistency with the terminology in the computer attitudes measurement literature. Beyer, Rynes, Perrault, Hay and Haller (2003) use multivariate analysis to study the experiences of first- and second-year computer science students, and conclude, "low computer confidence affects women regardless of level of computer experience or quantitative ability" (p. 52). Busch (1995) found women had lower confidence than men when facing complex tasks such as spreadsheet use but did not have lower confidence men on simpler computer tasks, indicating that complex, multi-stage tasks such as video-editing may be appropriate for analysis under self-efficacy theory.

Formal training can increase the confidence of both men and women on computer use by providing mastery experiences in a classroom setting (Torkzadeh & Van Dyke, 2002; Shannon, 2007). Training on Internet use significantly improved confidence for both men and women in an introductory undergraduate computer course at a southwestern university, regardless of whether the students had positive or negative attitudes toward computer use (Torkzadeh & Van Dyke, 2002). Confidence with general office-related computing tasks can be significantly increased through hands-on instruction and experience (Shannon, 2007).

Ability to approach video-editing software with a high level of confidence is especially important given the rapid pace of change in video-editing software where new versions are released every 12 to 18 months (Adobe, 2010; Apple, 2010), which renders formal training obsolete quickly. An individual's ability to take risks, tinker confidently, and "muck around" with video creation software becomes an important predictor of success in learning video-editing software. Women often engage with technology using techniques of nonlinear exploration and tinkering (Turkle, 1995; Beckwith & Kissinger, 2006), and these tendencies may foster success with video creation.

Technology Acceptance Model (TAM).

The second perspective that guides this study is TAM developed by Davis (1989). Davis began with a review of several theoretical frameworks – self-efficacy theory, cost-benefit paradigm, adoption of innovation and the evaluation and use of information – in the context of information technology use. He concluded that the wide range of theoretical frameworks converged to focus on two fundamental and distinct concepts – 'perceived ease of use' and 'perceived usefulness' (Davis, 1989). His work led to a series of versions of TAM that have since been incorporated in over 2,000 studies, mainly in the field of workplace computing. The TAM reflects some components of self-efficacy theory in the concept of "perceived ease of use" but focuses more on group perceptions of difficulty level (e.g., "how difficult would this be for most people to learn?") rather individual perceptions (e.g., "how difficult would this be for me to learn?") with ease of learning incorporated into the ease of use construct (Davis, 1989).

Through a survey of 450 computer users in Finland, Igbaria and Iivari (1995) found that computer experience "had a strong positive direct effect on self-efficacy, perceived ease of use, perceived usefulness and usage" (p. 587). From 1989 to 2000, a series of models emerged that incorporated segments of the TAM to look at technology acceptance in the workplace context. Venkatesh et al. (2003) provide a detailed taxonomy of eight different models in the workplace computing context; the models reviewed build on the theory of reasoned action, motivational theories, the theory of planned behavior, innovation diffusion theory, and social cognitive theory which includes self-efficacy theory as a subset. Their meta-analysis builds on the TAM model to propose a the Unified Theory of Acceptance and Use of Technology (UTAUT) that retains the components of 'perceived ease of use' and 'perceived usefulness' and adds a 'social influence' component. Venkatesh et al. (2003) verify in a workplace-computing context that these three components provide essential insights into technology use behaviors. In addition to providing a useful cross-reference of the eight models, their analysis highlights many areas of overlap across models (Venkatesh et al., 2003).

Yang et al. (2009) propose a conceptual framework that builds on TAM to examine college student creation of YouTube videos in Taiwan. With the dependent variable defined as 'intent to use' YouTube to share video, the framework begins with the standard TAM (Davis, 1989) with two factors – 'perceived ease of use' and 'perceived usefulness' – that affect 'attitude toward use' and 'intent to use.' Yang et al. (2009) then add in two factors from social influences theory – 'interpersonal norms' and 'social norms' – that further affect the outcome, 'intent to use.' Venkatesh et al. (2003) tested the importance of social influences which includes the 'interpersonal norms' and 'social norms' concepts and concluded that the impact of social influences is less clear than the two core concepts of 'perceived ease of use' and 'perceived usefulness' but does play a role in certain contexts. In particular, Venkatesh and Morris (2000) in their study of 445 individuals in five organizations embarking on a new computer system found 'social influence' to be more important for women than men in early stages of experience; these findings make the 'social influence' concept especially important for this study.

Stereotype threat theory.

The third perspective that guides this study is stereotype threat, the concept that negative stereotypes can result in reinforcing behaviors by group members. Steele and Aronson (1995) defined stereotype threat as the "risk of confirming, as self-characteristic, a negative stereotype about one's group" in their initial study of African American college students and standardized testing (p. 797). The study demonstrated differential performance by African Americans on standardized tests when a negative stereotype attached to race was deliberately invoked. The theory discusses the concept that each person has multiple identities, and in different situations, aspects of identity can be engaged that then affect performance in negative ways by triggering internalized stereotype expectations.

Cooper (2006) demonstrated the relevance of stereotype threat to the study of gender differences in technology use. In a 2006 experimental study, American high-school girls were separated randomly into two groups and asked to write essays that engaged either their "female" identity (through reflections on dating and social life) or their "student" identity (through reflections on courses and curriculum). Both groups were then asked to undertake complex PowerPoint tasks with a time constraint. Girls primed to focus on their female identity performed more poorly and experienced higher computer anxiety than counterparts who were focused on their student identity (Cooper, 2006). By stimulating stereotype threat in this narrow context where all participants are female, Cooper draws attention to how the concept of stereotype threat can help researchers understand what affects self-efficacy and mastery in a technology-use context. Koch, Müller and Sieverding (2008) analyzed attribution responses to a contrived technology failure after stimulating positive and negative gender-based stereotypes in German college students to find that, under a negative stereotype threat, women attributed the failure to their own inability to handle technology while men attributed the failure to faulty technology. No gender effects were found in the positive stereotype threat and control groups (Koch, Müller, & Sieverding, 2008).

Women and men may demonstrate differences in acceptance of gender stereotypes about technology use. Christofides, Islam and Desmarais (2009) examined gender stereotyping in the popular medium of Instant Messaging (IM) by asking 123 Canadian students to rate the expertise of an online interviewer who is randomly identified as either male or female, and found that male students uniformly judged the male interviewer to be more competent than the female interviewer. In contrast, female students did not show significant tendencies to generalize a gender stereotype (Christofides, Islam, & Desmarais, 2009).

Learned helplessness theory.

The fourth guiding perspective is the theory of learned helplessness. Learned Helplessness (LH) theory (Abramson, Seligman, & Teasdale, 1978) has been studied extensively for three decades in the context of psychological aversions, attitudes and performance in different disciplines. The theory states that experiences with uncontrollable events lead people to assume they cannot have control over future events, which then leads to behavior such as lack of motivation or self-fulfilling negative expectations (Harris, 2008).

Studies examining the relationship between learned helplessness and confidence with computing report mixed results. Rozell and Gardner (2000) examined 600 undergraduates at two Midwestern universities majoring in business studies and enrolled in a computer-intensive course; they used the Attitudes Toward Computer Usage Scale (ATCUS) instrument (Popovich, Hyde, Zakrajsek & Blumer, 1987) discussed in the Research Design section, and included measures of self-efficacy and learned helplessness in the same study. They conclude that learned helplessness "served as a key determinant of computer self-efficacy and causal attributions, which in turn influenced the users' affective states, performance expectations, and ultimately their performance" (Rozell & Gardner, 2000, p. 218). A more recent study of computer use for office productivity purposes by several hundred women at a midwestern university examined the learned helplessness theory using path analysis techniques and determined that the theory did not help explain differences in self-efficacy (Harris, 2008). Harris, however, does not control for factors that might influence results such as student status and prior computer experience, and only includes females in the study, so cross-gender comparison is not possible.

Learned helplessness builds on stereotypical perceptions of gender. Gender theorists have further explored separating the concepts of gender and sex using psychological gender theory and instruments such as the Bern Sex Roles Inventory (Barker & Aspray, 2006). Clegg and Trayburn (1999) use case studies to examine students in information technology courses in the United Kingdom; they explore perceptions of masculinity and femininity for specific computing tasks and the tendency to undervalue computing tasks where women show more fluency. Todman and Day

(2006) created variables to separate psychological and biological gender using the Bern Sex Roles Inventory and determined that, for 138 students in Scotland, the two variables did not always exhibit identical effects on self-efficacy and computer anxiety.

Gender Differences in Video Sharing Behavior

Several researchers have determined that significant gender differences exist in attitudes toward computing (Margolis, Fisher & Miller, 1999; Turkle, 1997). Margolis et al. describe differences in the ways male and female computer science majors relate to their discipline by stating, "While most of the male students describe an early and persistent magnetic attraction between themselves and computers, women much more frequently link their computer science interest to a larger societal framework" (p. 1). Only a few studies have examined gender differences in online video sharing behavior to date since the technology itself is just five years old (Gannes, 2009). Yang et al. (2009) studied 341 YouTube users in Taiwan and found significant gender differences in why people choose to share videos through YouTube. Using a conceptual framework that includes the TAM and social influence theory, they found that the intention of women to use YouTube to share videos is strongly influenced by perceived usefulness and social norms while the intention of men to do the same is strongly influenced by interpersonal norms. The study differentiates between local norms (e.g., what friends think of YouTube) and social norms (e.g., descriptions of YouTube in publications and mass-media).

Once a person decides to share videos online, gender may not impact frequency of video-sharing behavior. Biel and Gatica-Perez (2009) analyzed 270,000 worldwide YouTube users through direct analysis of all uploads for a four-day period in March 2009 and determined significant gender differences. They found the uploaders were predominantly male (a notable 73% of the total) but they also found that the number of videos uploaded per person did not differ by gender. They noted that female users had larger viewership and more YouTube friends and hypothesized that women may be more social in their use of YouTube (Biel & Gatica-Perez, 2009). It must be noted that YouTube user profiles are self-declared and may not be accurate in tracking gender information.

A few studies have looked at consumption of online videos. Budden, Anthony, Budden and Jones (2007) used media diaries to study the consumption of video content by 272 undergraduate and graduate students at a large public university in the southern United States. They found that male students accessed videos on YouTube at a much higher rate (a ratio of 4 to 1) compared to female students (Budden, Anthony, Budden, & Jones, 2007) and this gap across genders was the largest for the different media outlets included in the study. The Pew Internet and American Life Project has concluded after a national survey that young adults ages 18 to 29 are the most active consumers of online video (Madden, 2007); three in four adults in this age category watch online videos, and this age group is also the most active in using participatory aspects of online video by rating content, emailing links, sharing links via blogs and social media, and watching videos with others. Madden (2007) further emphasizes the role of social influence in the online video consumption process for young adults, making the point that 73% of adults ages 18 to 29 report watching online videos with friends and family.

Few studies have examined the creation of online videos. Hargittai and Walejko (2008) conducted a paper-and-pencil survey of 1,060 urban undergraduate students in

2007 and determined that "with creating film or video, fewer than one in five women (16.9 per cent) have done so compared with over a quarter (26.6 per cent) of men in the sample" (p. 247). They use a research design similar in many respects to this study to examine student behavior in creation and sharing of content in a variety of media including poetry, fiction, photography, film and video. Kafai (2006) examines gender differences in the creation of video games, an activity similar in some aspects to creation of online videos, by middle school children and finds, “persistent gender differences in virtually all design aspects” but “no significant gender differences in the proficiency of making games” (p. 38). Rideout et al. (2010) find that one in four high school students have posted videos online but do not examine gender-related aspects. Valentine and Bernhisel (2008) surveyed 325 students at one rural high school and 619 students at one private liberal arts college on video creation. Both institutions are in the northwest United States and serve primarily white student populations with moderate to high socioeconomic status. They found that high school students self-report more active creation of videos than college students, and within each group, a higher percentage of boys than girls are active creators of videos. By group, between 20% to 40% of the surveyed students reported creating videos, and 8% to 35% reported editing videos; the gender gap between boys and girls on video-editing was wider than the gender gap on video creation (Valentine & Bernhisel, 2008).

Gender Differences in Relationship between Confidence and Mastery

Several studies have documented that women show lower levels of confidence than men regarding technology use in relation to their actual level of mastery (Hage, 2006; Ketelhut, 2006). Hage examines the use of e-book technology by adults in the workplace through analysis of three Yahoo! Group user forums and finds significantly lower self-efficacy levels for women compared to men, but no significant difference in actual usage levels by gender. She measures confidence on use of e-books through agreement with "I feel confident" statements on 15 specific tasks. Ketelhut's longitudinal study of 96 middle-school students exploring an online multi-user virtual environment determined that students with high self-efficacy initially engaged in more data-gathering behaviors than students with low self-efficacy but these behavior differences narrowed over time. Ketelhut further determined that girls who began the program with low self-efficacy showed the greatest increase in mastery and self-efficacy (with a much more rapid growth in mastery compared to boys) regarding scientific inquiry over time and suggested that immersive computing experiences could have greater impact on girls' self-efficacy and mastery levels. Bunz, Curry and Voon (2007) compare people's perception of fluency on computer, web and email use to their actual performance and determined that no gender difference existed in actual fluency but women perceived their fluency to be lower than men did.

Research also shows that women exhibit greater anxiety toward computers than men. McIlroy, Bunting, Tierney and Gordon (2001) determined for undergraduate social science students in the United Kingdom that women experiencing greater anxiety with computers, even when controlling for several background variables. The study also found that access to computing facilities and supportive training situations improved women's attitudes but did not alleviate anxiety (McIlroy et al., 2001). A survey of over 600 British undergraduates on Internet use found that using the two constructs of Internet identification (a measure of self-concept) and Internet anxiety captured 37% of the explained variance in Internet use, compared to just 3% of the variance explained by a small, but significant, negative correlation where women used the Internet less than men (Joiner et al., 2005). Conrad and Munro (2008) found, using a newly developed Computer Technology Use Scale (CTUS) with 479 Australian university students, that higher levels of computer confidence are associated with more positive attitudes toward technology and lower levels of computer anxiety.

Two studies find results that contradict the conclusions above, concluding that gender does not affect the relationships between self-efficacy and performance. Using the validated instrument of the Tennessee Online Instruction Survey (TOIS) that was developed by Randall (2001) based on self-efficacy theory, Fletcher (2005) surveyed 470 Australian undergraduates and used non-parametric statistical techniques with an experimental design study to conclude that gender was unrelated to online learning self-efficacy. A 2007 study of 48 college students at a German university concluded that no significant gender gaps existed in terms of computer ownership, access and self-efficacy (Imhof, Vollmeyer, & Beierlein, 2007).

Moderating Effects of Ethnicity, Immigrant Status and Family Context

Prior research on computer use has highlighted the importance of characteristics such as cultural/family background, immigrant history and socioeconomic status in describing the frequency and intensity of computer use, and has also documented the possibility that some of the differences in computer use patterns may be narrowing in recent years (Pryor & Hurtado, 2008; Bozionelos, 2004). CIRP data on entering freshmen in 2008 found that a higher share of Asian American / Pacific Islander freshmen than white freshmen (22% versus 13%) wrote blogs (Pryor & Hurtado, 2008). The same pattern of racial/ethnic differences held for blog-reading with 38% of Asian American / Pacific Islander freshmen reading blogs (the highest) compared to 23% of white freshmen (the lowest), with other groups falling in between (Pryor & Hurtado, 2008).

Studies show mixed results on the relationships that ethnicity and gender may have with computer use and confidence. Adadevoh (2000) conducted descriptive analysis of survey data from 147 graduate students at two urban universities in Texas found significant differences by gender and ethnicity in levels of computer usage and computer knowledge. Her results indicated that men used computers more but had lower levels of knowledge than women. Her study included only three ethnic categories – Whites, Blacks and Others – and she determined Whites to have the highest level of computer literacy followed by Others and then by Blacks (Adadevoh, 2000). A more recent study of interest in IT careers for 1,482 adolescents in Maryland provides a more complex ordering, finding that black females rated themselves as capable as white males did and significantly more capable than white females and black males (Zarrett, Malanchuk, Davis-Kean, & Eccles, 2006). Coolbaugh (2004) analyzed the performance of 232 first-year undergraduate students at a four-year college in Colorado on an optional technology proficiency examination, which assessed facility with common computer tasks including Internet access, common productivity software and operating system use. Her regression and analysis of variance found ethnicity to be a significant predictor of proficiency especially differentiating Hispanic and White students. She found financial aid status was also significant, but among students who received financial aid, family income was not significant (Coolbaugh, 2004).

Explicit relationships between socioeconomic status and computer use and confidence are less well documented in comparison to studies involving ethnicity. Bozionelos (2004) used causal path modeling to determine that, for university students in the United Kingdom, higher socioeconomic status has a positive relationship with computer experience and a negative relationship with computer anxiety.

Several qualitative studies describe how women's self-efficacy with computing differs across race, ethnicity and class-based groupings (Ahuja, 2002; Campbell, 2000; Kvasny, 2006). Kvasny's ethnographic study of working-class African American women looking to computing as economic opportunity emphasizes the need to consider race and ethnicity explicitly. Kvasny's work describes this group of women taking risks with personal learning activities and making a commitment to learning new software, confirming the quantitative results reported by Zarrett et al. (2006).

Some studies do not find significant differences by gender for groups that are homogeneous in terms of the demographic factors of ethnicity, race or socioeconomic status. Teo (2008) found no significant difference by gender in attitudes toward or ownership of computers for students at Singaporean universities. Teo (2008) measures 'computer enjoyment,' 'computer importance' and 'computer anxiety' as three aspects of attitudes toward computers, and credits increased computer ownership and the strong Singaporean network infrastructure for reducing gender gaps. Coolbaugh (2004) did find significant differences by ethnicity but no significant differences by gender in computer proficiency level for freshmen at a four-year college in rural Colorado. Goodyear, Jones, Asensio, Hodgson and Steeples (2005) found no difference by gender in British undergraduate experiences using computer-mediated conferencing systems. One study by Goldstein and Puntambekar (2004) found that in a Connecticut suburb, middle school girls were more effective and efficient than male classmates at managing technology-intensive collaboration regardless of ethnicity and socioeconomic status.

Few studies provide cross-national comparisons of gender and computer use (Cohoon & Aspray, 2006), which would be helpful to understand the possible impact of immigrant status. As described in the Chapter 3, differences by immigrant status are especially important to consider in the context of this dissertation's population. One notable exception is a large study of twenty-one countries (Charles & Bradley, 2006) that finds differences across countries in the representation of women in computing-intensive fields, noting, "the three countries where women are best represented in computer science are Turkey, Ireland and Korea, none of which are well-known for their gender-egalitarian practices or cultures" (p. 194). In contrast, the Czech Republic and the Slovak Republic have the lowest levels of female representation, and rank much lower in terms of the percentage of women. Charles and Bradley (2006) conclude that affluent societies that present young women with a wide range of disciplinary choices without identifying strong images of 'correct' choices may make it easier for women to accept gendered roles, and therefore shirk exploration of computer science and other "male" disciplines. They also conclude that the leading countries – Turkey, Ireland and Korea - have structured formal K-12 education systems that require computer science instruction for boys and girls (Charles & Bradley, 2006).

For all groups, the rapid reduction in costs of computers and Internet access is resulting in greater intensity of use over time. Pryor et al. (2007) conclude after looking at data over a 40-year period that, "persistent gaps between student groups in the use of the Internet as a tool in the educational experience remain, but much progress has been made in recent years in closing these gaps across race and family income levels" (p. 17). One study of undergraduate attitudes toward computers further found that male and female students show more similar attitudes toward computers in 2005 than they did in 1986 (Popovich, Gullekson, Morris, & Morse, 2008).

Computer Experience and Formal Training in High School

The four theoretical frameworks discussed describe different facets of how women and men approach technology at a particular moment in time. Several studies have considered techniques to increase self-efficacy through training and support (Beyer, 1995; Beyer et al., 2003; Shannon, 2007). Shannon conducted a non-parametric analysis to assess the impact of an introductory computer class on the comfort levels with what she defines as Digital Life Environments (DLE). She distinguishes between DLE and traditional methods of assessing computer use through Information and Communication Technology (ICT) literacy. She looks at Millennial Generation students and discusses how social networking and other technologies are now integrated into their existence and not explicitly separated into academic and personal categories. She described this cohort of students as "smart, but impatient and easily bored" (Shannon, 2007, p. 21). Her non-parametric analysis of data collected from 439 students at a rural Texas university found a significant difference by gender and ethnicity in self-efficacy on ICT skills before a college course designed to boost computer skills and determines that formal training can narrow gender and ethnicity gaps. Women had significantly lower levels of confidence on ICT skills than men at entrance, and after a semester-long course, no statistically significant difference by gender emerged. Instruction increased self-efficacy for both men and women and narrowed the gender gap (Shannon, 2008). At entrance, Shannon found significant differences in self-efficacy on ICT skills by ethnicity (in order from highest to lowest were Asian, White/Non-Hispanic, Other, Hispanic and African-American students), and found no differences across groups after the course (Shannon, 2007).

Students who attend high schools that are large and / or affluent are more likely to have exposure to formal training and hands-on experience with video creation skills (Goodman & Greene, 2003). Goodman and Greene discuss persuasively the potential for using video production to enrich middle and high school experiences for low-income students, commenting, "Taking a video camera into a community as a regular method for teaching and learning gives kids a critical lens through which they can explore the world around them… This approach to critical literacy links media analysis to production." (p. 3) Taking into consideration training experiences prior to entering college may assist in separating out the effects of high school experiences. Large high schools are more likely to offer formal coursework in computer science. High school experience with computing has been shown to be sharply gendered in contrast to other STEM disciplines such as biology and chemistry; girls are just 16% of the test-takers of the Computer Science Advanced Placement Test, but they comprise 40% to 60% of test-takers for other STEM subjects (Barker & Aspray, 2006).

Summary of Review of Prior Research

Online video creation, active only since 2006, has not been studied in detail in terms of gender-related differences. Studies on general computer and Internet use point to some differences in self-efficacy, anxiety and usage patterns that may be relevant. Some studies found significant differences in computer usage and proficiency by gender (Adadevoh, 2000; Shannon, 2008), and others did not (Coolbaugh, 2004). Review of

CIRP data over 40 years shows dramatic increase in Internet use and computer familiarity and narrowing of gender gaps (Pryor et al., 2007). Research on the effects of other demographic factors – race, ethnicity, immigrant status, etc. – on computer use and computer-related self-efficacy is not conclusive. Relationships between gender and self-efficacy have been shown to be strong in several contexts (Beyer, 2003), but again gaps may be narrowing over time (Coolbaugh, 2004; Goodyear, 2008; Teo, 2008). Women seem less likely to post videos online but once online, they are active at about the same level as men (Biel & Gatica-Perez, 2009). Yet, since YouTube was just launched in 2006 (Gannes, 2009), there is not much data to consider regarding trends in creation of online videos by gender or other demographic factors.

This study addresses current gaps in knowledge by collecting information on the number and complexity of online videos created by freshmen entering enrollment at a highly selective research university. Four theoretical frameworks– self-efficacy theory, TAM, stereotype threat and learned helplessness – provide guidance for examining online video creation behavior. These perspectives, although different in some respects, also have substantial overlap (Rozell & Gardner, 2000; Venkatesh et al., 2003). Key concepts included in this study and represented in the conceptual framework are ‘attitudes toward computing’ (further separated into four aspects of ‘computer confidence,’ ‘tool use,’ ‘negative attitudes toward computers’ and ‘positive attitudes toward computers’), and TAM (further separated into three aspects of ‘perceived ease of use,’ ‘perceived usefulness’ and ‘social influence’). The focus of this study on online video creation by male and female freshmen, especially the analysis of technical complexity of video creation tasks, is the exploration of new territory.

CHAPTER 3: Research Design

Given that online video creation is a new field, open to the general public in the United States only since 2006, little research has been published on related gender issues. College-age students are the most active users – both creators and viewers - of online videos (Gannes, 2009). Some online videos are casual creations, captured by cell-phone while others are the result of painstaking edits using complex video-editing software (Molyneaux et al., 2008). The self-efficacy of women has been shown to be lower than for men for more complex software tasks, but not distinguishable for simple software tasks (Busch, 1995). Some studies indicate a narrowing of gender gaps in confidence in recent years (Teo, 2008; Imhof et al., 2007). This study examines gender differences in online video creation for freshmen attending a highly selective research university using a conceptual model that draws on the theoretical frameworks of self-efficacy, TAM, stereotype threat and learned helplessness, while controlling for demographic and situational variables. The study also includes a qualitative inquiry component to shed further light on these relationships.

Research Questions and Conceptual Framework

This study uses a mixed methods design to address three research questions. Descriptive and multivariate analyses of data collected via a questionnaire are first used to address the research questions. Subsequently, qualitative inquiry with data collected via focus groups and interviews is used to provide a richer picture and to better inform understanding of gender differences in online video creation. The three questions are:

1. For first-year traditional-age college students attending a highly selective research university, what gender differences exist in online video creation?
2. How do the theoretical perspectives of self-efficacy, technology acceptance, stereotype threat and learned helplessness inform understanding of such gender differences after controlling for demographic characteristics such as ethnicity, socioeconomic status, immigrant status and high school size?
3. Does the relationship between confidence using computers and online video creation vary between women and men?

Figure 1. Conceptual Framework

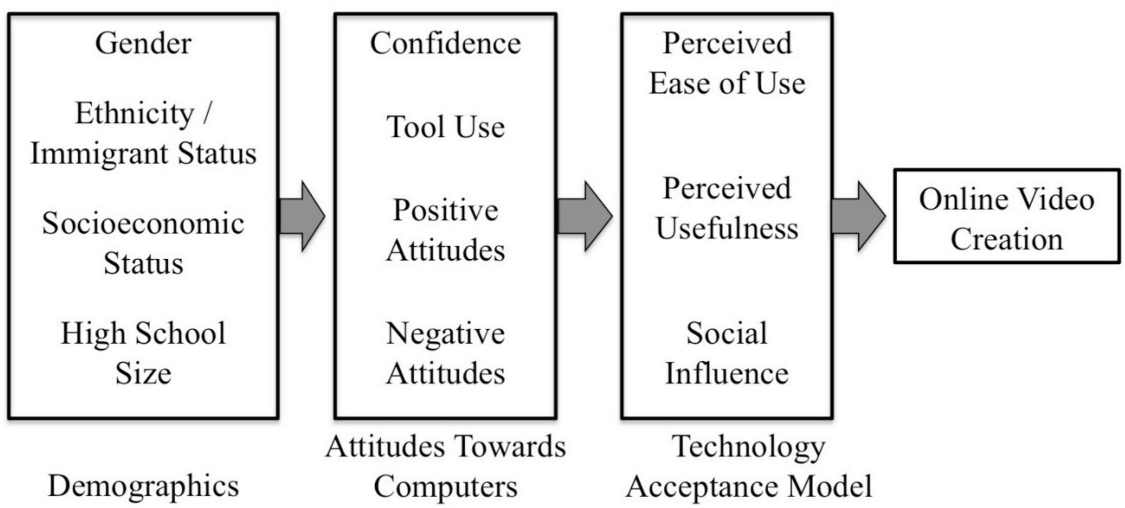


Figure 1 shows the conceptual framework guiding the analyses. The conceptual framework includes elements from the extended TAM (Davis, 1989), self-efficacy theory (Bandura, 1997), stereotype threat (Steele & Aronson, 1995), and learned helplessness theory (Abramson et al., 1978). The independent variables are organized into three blocks. The first block has the four demographic components of gender, ethnicity / immigrant status, socioeconomic status and high school size. The second and third blocks incorporate the theoretical frameworks of self-efficacy, learned helplessness and stereotype threat. The second block brings in attitudes toward computers. Attitudes toward computers are measured using the four subscales from the Attitudes Toward Computer Usage Scale (ATCUS) v2.0 reflecting confidence using computers, tool use, positive attitudes toward computers and negative attitudes toward computers (Morris, Gullekson, Morse & Popovich, 2009). The third block brings in the TAM as adapted by Yang et al. (2009) and is measured by three concepts of perceived ease of use, perceived usefulness and social influence.

Yang et al. (2009) also include a factor called ‘perceived network externality’ to measure physical infrastructure. This study includes freshmen at a single university campus with consistent, reliable, high-speed Internet infrastructure so this factor is not needed. Yang et al. (2009) also include two separate factors from social influence theory –‘interpersonal norms’ and ‘social norms.’ This study combines the two factors into a single factor of ‘social influence’ since the distinction between the two factors is unclear.

This study differs from the Yang et al. (2009) study in several other aspects. Yang et al. examine the use of YouTube to share videos, focusing on the ease of use of the YouTube platform. This study examines the creation of videos to be shared on YouTube and similar services; such creation can have a range of complexity involved as discussed earlier. Yang et al. also include ‘gender’ as a single moderating variable, whereas this study focuses on gender but also includes several other demographic and situational variables. Their study includes only students in Taiwan; this study includes only students at one highly selective research university in the United States. Thus this dissertation tests the extension of a variation of the model developed by Yang et al.

The third research question explores whether the relationship between computer confidence and online video creation varies by gender, using a statistical interaction test. Based on similar studies in the computer use context (Beyer, 2003; Koch et al., 2008), it is possible that the relationship between confidence using computers and mastery of online video creation is different for women than for men.

Population for Study

Data for this study are collected from students attending a large, highly selective research university. Studying freshman at this type of institution allows a focus on computer confidence in a context where all students have reliable access to high speed Internet and state-of-the-art computing, and where all students enter college with high levels of academic preparation and confidence in comparison to other institutions.

According to 2007 data from the Integrated Post-secondary Education Data System (IPEDS) collected by the U.S. Department of Education's National Center for Education Statistics (NCES), this university is one of 263 U.S. universities with the Carnegie classification of "Research Universities" and one of 96 U.S. universities with the further classification of "Very High Research Activity" based on budget allocation for research. The website CollegeResults.org provides data on student body characteristics for this university and all universities in the national datasets for Very High Research Activity Research Universities and all Research Universities; such comparison gives parameters for understanding the external validity of study results. The analysis below defines a university as not representative in a particular characteristic if it falls in the top or bottom five percent of the national distribution. This university has a student body that is representative of all universities with very high research activity in terms of enrollment size, gender, ethnicity, age and part-time enrollment levels; it does not fall in lowest or highest 5 percentile for any of these characteristics. Table 1 lists percentiles, rounded to the multiple of 5 just below the actual value; this university is in the top or bottom five percentile of the distribution for just two characteristics, having a greater representation of students not eligible for Pell grants and of international students.

Table 1

Student Body Demographic Characteristics

Characteristic	Percentile of all Research universities (N=263)	Percentile of Very High Research Activity universities (N=96)
Undergraduate Fulltime Enrollment (FTE)	50	30
Female enrollment	35	50
Enrollment of underrepresented minorities	40	50
Black enrollment	50	60
Latino enrollment	55	45
Native American enrollment	35	35
Asian enrollment	85	75
White enrollment	15	15
Part-time enrollment	60	80
Enrollment of students over 25 years old	40	65
Enrollment of students not eligible for Pell grants	95	90
Enrollment of students with non-resident immigration status	95	95

Source: Analyses of data from College Results Online, a website for IPEDS data mining.

The student body at this university is unusually well prepared academically in terms of standardized test scores but not at the extreme end of the national distributions (i.e., defined here as not in the top or bottom five percent). Table 2 describes academic preparation of entering freshmen as measured by standardized test scores.

Table 2

Academic Preparation of Entering Freshmen

Characteristic	Percentile of all Research universities (N=263)	Percentile of Very High Research Activity universities (N=96)
Estimated Median SAT/ACT score	90	80
SAT Verbal 25th percentile	85	70
SAT Verbal 75th percentile	85	70
SAT Math 25th percentile	90	85
SAT Math 75th percentile	90	80
ACT Composite 25th percentile	90	85
ACT Composite 75th percentile	90	80

Source: Analyses of data from College Results Online, a website for IPEDS data mining.

This university has an international reputation, is ranked highly on several ranking systems and has a sizable endowment. Table 3 shows that this university is in the top five to ten percent of the national distributions in terms of admissions selectivity and in terms of student success as measured by six-year graduation rate.

Table 3

Selectivity and Student Success Characteristics

Characteristic	Percentile of all Research universities (N=263)	Percentile of Very High Research Activity universities (N=96)
Admissions Selectivity (Percentage of applicants not offered admission)	95	90
Six-year Graduation Rate	95	95

The relatively high levels of admissions selectivity and standardized test scores at the selected institution indicate that entering freshmen come with substantial confidence in their academic ability; this is a student body that has largely succeeded academically in high school. This study can therefore focus on confidence on computer use as it relates to online video creation without having to account for confidence levels related to general academic preparation.

This institution has a single large campus. In order to maintain measurement consistency, since video creation practices change rapidly with new hardware and software (Adobe, 2010; Apple, 2010), data are collected in a short period of time immediately after the freshmen arrive on campus. Quantitative data are collected via a questionnaire in paper and online formats, and qualitative inquiry is conducted with data collected through focus groups and interviews.

Design of Quantitative Data Collection

Design of the questionnaire for this study began with extensive review of several published instruments. Components of the questionnaire were adapted, with permission, from prior studies and further refined through consultations and pilot testing.

Review of Existing Instruments.

The fast pace of change in computing technologies has resulted in the development of several scales to measure self-efficacy and mastery, and the value of these scales declines rapidly as technology changes (Garland & Noyes, 2008). Garland and Noyes examined four well-studied scales measuring attitudes toward computers designed between 1986 and 1998, and concluded that although they maintained a reasonable level of reliability, their validity may have been reduced over time (Garland & Noyes, 2008). The older scales depend on measuring experience through statements such as: “I know how to write computer programs” and obviously outdated statements such as “I hope I never have a job that requires me to use computers.” Attitudes toward computers must be more nuanced and complex today (Garland & Noyes, 2008), and newer scales address some of these concerns. For example, Holcomb, King and Brown (2004) include in a Technology Self-Efficacy (TSE) scale the statement, “I often have difficulties when trying to learn how to use a new computer software package” as a way to capture attitudes toward ongoing learning processes.

Conrad and Munro (2008) created the Computer Technology Use Scale (CTUS) instrument with 36 items broadly categorized into three areas: computer self-efficacy, attitudes toward technology and technology-related anxiety. The authors do not permit excerpting items from this instrument and several of the 36 items address general computer use aspects that do not relate clearly to this study’s topic of online video creation. The structure of the CTUS scale has informed the conceptual framework and the design of the questionnaire instrument.

After review of several related instruments, the ACTUS v2.0 instrument emerges as notable in the literature. Popovich et al. (1987) designed the Attitudes Toward Computer Usage Scale (ATCUS) instrument to measure “how people react to computers and computer-related mechanisms” (p. 262). Using data collected through two studies at a midwestern university that included over 700 undergraduate students, they determined the scale of 20 items to have high internal consistency with a 0.84 (alpha) reliability estimate and a high test-retest correlation of 0.91. They concluded that, using factor analysis, data collected from the instrument measured four constructs: negative reactions to computers, positive reactions to computers, computers and children / education, and reactions to familiar computer-related mechanisms (Popovich et al., 1987).

Over the past two decades, the ATCUS scale has been found to have strong psychometric properties (Shaft, Sharfman and Wu, 2004) and has been chosen for a wide range of studies - in academic settings (Torkzadeh & Van Dyke, 2002), across age categories (Baack, 1991), with pre-service teachers (Liu et al., 2004), across international contexts (U. N. Statisticians, 1992) and for adult learners in a distance learning context in Thailand and Australia (Sringam, Barnes, & Yates, 2001). Some items such as: "I would prefer to type a paper on a word processor than on a typewriter" have become outdated (Popovich et al., 1987, p. 265). Belleau and Summers (1993) re-evaluated the scale, and although their study reported lower reliability for ATCUS compared to the two other scales examined, they concluded with a recommendation of the ATCUS scale for "general applications … college students, senior citizens, or any other group where the intent of the research is to measure attitudes towards computers in general" (Belleau & Summers, 1993, p. 281). Shaft et al. (2004) undertook the ambitious task of comparing 31 different scales of computer use, and determined that the ATCUS was one of only four of the 31 scales that had been assessed for stability over time. They further gave high praise to the ATCUS instrument noting it was the "only instrument for a general population for which the latent structure, internal consistency, and stability has been assessed" (Shaft et al., 1993, p. 673).

The continued and persistent interest in ATCUS led to a cross-decade analysis of undergraduates by the original creator, Paula Popovich, with her colleagues Gullekson, Morris and Morse (2008) in a study appropriately titled, "Comparing attitudes toward computer usage by undergraduates from 1986 to 2005." This study found that gender gaps in attitudes had narrowed substantially in two decades. Following on this work, Morris et al. (2009) then revised the Attitudes Toward Computer Usage Scale (ATCUS) to create ATCUS v2.0, and validated the new set of 22 items with 254 undergraduates attending a midwestern university. The revised version removes highly correlated items and updates terminology. ATCUS v2.0 has been shown to have high internal consistency with an alpha of .83 and high test-retest reliability level of .93 (Morris et al., 2009). The authors conclude that the revised scale "is as widely applicable and as psychometrically sound as the original ATCUS" (Morris et al., 2009, p. 541).

Factor analysis of the ATCUS v2.0 yielded four subscales: computers for tool use, confidence using computers, negative reactions to computers and positive reactions to computers, which is a somewhat different formulation of factors than listed earlier for the original ATCUS scale (Morris et al, 2009). The scale creators have confirmed a high degree of correlation between 'self-efficacy using computers' measure and the 'confidence using computers' subscale (Morris et al., 2009). ACTUS v2.0 does not include questions specific to online video creation.

Questionnaire Creation.

The questionnaire is designed to take approximately five minutes to complete and is administered in both online and paper formats. The questionnaire mostly uses Likert scale questions with a few open-ended questions. Questions have been refined in consultation with experts at national organizations that focus on online video creation activities. Laurence Johnson, Executive Director of the New Media Consortium an international not-for-profit consortium focused on exploration of new media, provided guidance on terminology and question construction. Joan Lippincott, Associate Executive Director of the Coalition for Networked Information (CNI), a joint program of the Association of Research Libraries (ARL) and Educause, a national organization supporting educational technology use, provided guidance on narrowing the scope of questions. Through consultation with administrators at the research university under study, word choice on institution-specific questions was improved.

The questionnaire begins with questions pertaining to the dependent variables on video creation, explores attitudes specific to video creation followed by general attitudes toward computers and then addresses demographic characteristics such as socioeconomic status, high school details, gender, ethnicity and immigrant status. Questions for the different parts of the conceptual framework are not necessarily contiguous in the instrument.

The questionnaire utilized in this study (see Appendix 1-A for the online format and Appendix 1-B for the paper format) asks students to describe the number and complexity of online videos created. Questions related to online video creation have been created for this study to reflect the current technology for video creation. Some of the technical terms may have a limited relevance for future studies since video creation processes change every 12 to 18 months as new software versions are released by software manufacturers (Adobe*,* 2010; Apple, 2010).

Pilot test of instrument.

Appendix 2 includes the draft of the instrument before the Institutional Review Board approval and pilot test process. Through the approval process for the Institutional Review Board and pilot testing, the instrument was simplified and modified to the versions provided in Appendix 1-A and 1-B. The questionnaire was pilot-tested through activities conducted during the three summer months prior to data collection. Ten individuals at national organizations and at this institution provided feedback and guidance on terminology. One faculty member suggested adding an open-ended question to directly address issues of perceived identity and with a resulting item, “Your friend plans to introduce you tomorrow to someone who has published over 100 online videos. Please give three to five words that describe who you expect to see?” This open-ended question was included on the pilot test. However, feedback from the pilot test indicated that this question created confusion and delayed completion of the questionnaire and it was subsequently removed. One faculty member suggested the addition of a “prefer not to answer” option for all questions on ethnicity and identity. An administrator in the Office of Drug and Alcohol Abuse suggested the addition of a third option, “Neither of these pertain to me” on the question of gender in order to be inclusive of transgender students. This suggestion was considered but not implemented, given the centrality of gender to this dissertation. I worried that including this option might confuse students who were not transgender or inspire students to pick that choice as a light-hearted response. Since the gender question was not a required question, I assumed that transgender students could simply skip that item. (16% of respondents skipped the gender question.)

For the pilot test, four students who entered this institution as first-year students the previous fall completed the survey online while under observation. The survey software tracked the time to completion per item, yielding insights into confusing and problematic items. After survey completion, participants were interviewed informally on reactions to the survey with particular attention to whether any questions seemed intrusive, confusing or difficult to answer. Another ten undergraduates were invited to participate in this process through in-person and email outreach but did not respond.

One white female student planning to major in psychology completed the instrument at a psychology research lab meeting. She had no video experience, had a completion time of less than five minutes, and indicated that the instrument did not raise any concerns for her. The only question that created a delay for her was Question 18 in Appendix 2 on an open-ended response on career plans.

One African American male student planning to major in international relations completed the instrument in the main library. He had substantial video editing experience. His pilot test experience indicated several weaknesses in the instrument design. When he reached the open-ended question included on the pilot test and later removed about perceptions of a student who had made over 100 online videos, he hesitated and then stopped to ask for clarification. I asked him to interpret the question as he wanted to, but he continued to hesitate and had difficulty coming up with descriptive words. After further conversation, I instructed him to skip ahead. He found Question 8 in Appendix 2 difficult and explained that since he multitasks often, it is not sensible to try to separately calculate time spent on school and social activities since they overlap so much of the time. His answers resulted in a very high number of hours per week since several items represented double-counting of time. He had difficulty understanding the term “grammar school” in Questions 15 and 16 on parental education levels. As with the first pilot test participant, he found Question 18 on career plans problematic and left it blank. He had difficulty with the questions 24 and 25 on immigration. A second-generation immigrant from North Africa, he found Question 25 in Appendix 2 misleading and chose the United States as his country of origin.

One African American female student planning to major in urban studies completed the instrument in the main library. She had intermediate level expertise in video creation. She had substantial difficulty with the open-ended question about her perceptions of someone who has made over 100 videos and asked about which aspects of such a person she was expected to describe. She had difficulty with Question 8 on estimating hours spent on different activities and took substantial time to complete this item. She was critical of Question 18 on career plans and mentioned that this item may be stressful for freshmen who have just joined a university. She found Question 25 about country of origin to be offensive and a privacy intrusion.

One African American male student with undecided major plans completed the instrument in the main library. He took very little time to complete the questions and indicated that the process was efficient and enjoyable. He struggled with Question 8 on high school time allocation. He hesitated substantially on Questions 9, 10 and 11, changing his responses to the Likert scale options several times.

Based on the conversations and pilot test student experiences, the instrument shown in Appendix 2 was simplified and shortened. Questions on image and identity, career plans (Question 18), country of origin (Question 25), five items from the ATCUS v2.0 scale (Questions 9 and 10) and time allocation in high school (Question 8) were removed. The parental education level questions (Questions 15 and 16) were rewritten with more colloquial terms and language to highlight survey incentives was added.

Video Creation Questions.

The first question on the questionnaire is a yes-no question to identify if the student has created one or more online videos. Students who respond in the affirmative then access a series of questions about the number and types of videos created, self-rating of video creation expertise, use of video-editing software, and reasons why they decided to undertake video creation. Table 4 lists all questions related to online video creation. Through the implementation of skip logic, only students who reply in the affirmative to the first question receive the other video-related questions on the online questionnaire.

Table 4

Questionnaire items for Dependent Variables on Video Creation

Questionnaire Items
Have you created a video for sharing via the Internet (Common websites include YouTube, Facebook, blip.tv, Vimeo, etc.)? Yes or No.
How many videos have you created (Estimate if needed)? Open ended response
What roles did you play in creating online videos? Multiple selection enabled; Yes or No for each of nine possible roles: I performed in the video(s) I created a simple slideshow with photos and music I clicked record, then stop, then uploaded from a cell-phone or built-in webcam I used a handheld video-camera, transferred video to a computer and uploaded I created a machinima, animation or other computer-generated video I added music, still images or titles I fixed audio or video quality I worked with several clips, did substantial editing I planned, directed or produced the video
Which of the following best describes you? Select one of three choices: I am a beginner at creating online videos I am at an intermediate level in creating online videos I am expert at creating online videos.
If you edited video on a computer, what software did you use (List up to three titles)? Open ended response.
How important were the following factors in your decision to make the video(s)? Select one choice on a 5-option Likert Scale: Not important, Not very important, Somewhat important, Important, or Very Important. Friends and classmates Fame, online reputation Having fun on a computer Influencing others, advocacy Desire to improve video creation skills

The questions on video creation are followed by questions on attitudes toward computers and the TAM Model. The demographic questions are presented at the end of the questionnaire.

Demographic Questions.

Questions for the first block of the conceptual framework address gender, ethnicity, socioeconomic status and high school size. The ethnicity categories and terminology are defined in collaboration with the institutional research offices at the institution under study and reflect changes in IPEDS and national data collection conventions. Race and ethnicity information is gathered through a set of questions with skip logic, using wording for racial and ethnic demographics from the 2010 application form for the Common Application, an association established in 1975 and now in use for undergraduate applications by close to 400 colleges in the United States (Common Application, 2010). The same broad groupings, with less detailed descriptors, are used by the Universal College Application, in use at 85 other colleges in the United States.

Each student first indicates yes or no on the question: “Are you Hispanic / Latino (including Spain)?” and then “Which of the following categories best represents you?” with six options: American Indian or Alaska Native (including all Original Peoples of the Americas); Asian (including Indian subcontinent and Philippines); Black or African American (including Africa and Caribbean); Native Hawaiian or Other Pacific Islander (Original Peoples); White (including Middle Eastern); and Prefer not to answer. Students who selected an option other than “prefer not to answer” received a follow-up question, “Please select any additional categories that represent you,” and could choose as many as they wished from the remaining categories. This structure allowed students to indicate multiple ethnicities and to choose to leave ethnicity information undisclosed.

Since the university under study has an unusually high level of international students and immigrant status is related to technological self-efficacy (Charles & Bradley, 2006), the instrument collects data explicitly on immigration status. Students select from five options for their immigrant status: International student; First-generation immigrant (You were born outside the U.S.); Second-generation immigrant (One or both parents were born outside the U.S.); Not a first- or second-generation immigrant; or Prefer not to answer.

Socioeconomic status is addressed only in a very narrow sense. Youth are often misinformed about the income levels and socioeconomic status of their families (Entwisle & Astone, 1994) and people in general are uncomfortable reporting both unusually high and unusually low levels of income (Moore, Stinson, & Welniak, 2000). As discussed earlier, the university under study is notable for having a very low percentage of students eligible for Pell grants. Two questions on father and mother's level of education provide one dimension of family income and a third question about Pell grant eligibility provided a proxy for family income.

Students indicate the size of their high school in terms of enrollment, choosing from four categories of less than 300, 300 to 999, 1000 to 2000 and more than 2000 students. Due to the space and capital investment required, large and / or affluent high schools are most likely to offer students formal experience in online video creation, and such programs could increase confidence with computers, tool use, perceived usefulness and perceived ease of use (Shannon, 2007). The questionnaire did not distinguish between private and public schools. Students in small, high-cost private high schools that integrate video creation into the curriculum would be expected to select small high school size and creating videos mostly for required school projects; this intersection is considered with descriptive statistics. Table 5 lists the demographic questions.

Table 5

Demographic Questionnaire Items

Questionnaire Item
Gender Select one of two options: Male or Female.
Race / Ethnicity Are you Hispanic / Latino (including Spain)? Yes or No. Which of the following categories best represents you? Select one of six options: American Indian or Alaska Native (including all Original Peoples of the Americas); Asian (including Indian subcontinent and Philippines); Black or African American (including Africa and Caribbean); Native Hawaiian or Other Pacific Islander (Original Peoples); White (including Middle Eastern); and Prefer not to answer. Please select any additional categories that represent you. Select multiple from the options not selected in previous question using skip logic: American Indian or Alaska Native (including all Original Peoples of the Americas); Asian (including Indian subcontinent and Philippines); Black or African American (including Africa and Caribbean); Native Hawaiian or Other Pacific Islander (Original Peoples); White (including Middle Eastern); and Not Applicable.
Immigrant Status Please indicate your immigrant status: Select one of five options: International student; First-generation immigrant (You were born outside the U.S.); Second-generation immigrant (One or both parents were born outside the U.S.); Not a first- or second-generation immigrant; Prefer not to answer.
Low Socioeconomic Status Education level of parents: What is the highest educational level of your mother? What is the highest educational level of your father? For each question, select from one of eight options: Less than eighth grade; Completed eighth grade; Completed high school; Attended some college or postsecondary school; Completed undergraduate studies; Attended some graduate school; Completed graduate degree(s); and Unknown. Do you receive Pell grant funding? Select one of three options: Yes, No, Don’t know.
High School Size How many students attended your high school? Select one of four options: Less than 300; 300 to 999; 1000 to 2000; or More than 2000.

Attitudes Toward Computers Questions.

Questions for Attitudes Toward Computers are adapted from the published ATCUS v2.0 instrument (Morris et al., 2009). Morris provided permission to use the ATCUS v2.0 questionnaire items for this study (S. Morris, personal communication, March 8, 2010) and provided the documents used for data collection and coding. The questionnaire alters the instrument from a seven-option Likert scale a five-option Likert scale to ease completion, boost response rates, and maintain cognitive consistency with other questions.

The questionnaire includes 17 of the 22 original items with minor language updates. Ten items are used verbatim. Seven items are used with minor terminology and word choice updates, such as using the term 'DVD player' to replace 'CD player' and 'handheld device' to replace 'PDA.' Five items are removed in order to shorten and simplify the instrument; these items are assumed to be obsolete, irrelevant or obvious choices for the age group under study and the time period for data collection. The items are 'I enjoy using the computer to pass time and/or for fun,' 'I like to play video games," 'I feel that having a computer at work would help me with my job,' 'I prefer to use an automated-teller machine (ATM) rather than go into the bank,' and 'I know I will understand how to use computers.' Table 6 lists the ATCUS v2.0 items as used in this study.

Table 6

Attitudes Toward Computers: ATCUS v2.0 items as adapted for this study

Questionnaire Items
All 17 items scored on 5-option Likert scale: Strongly Disagree, Disagree, Neutral, Agree, or Strongly Agree.
Computer Confidence items:
I like to keep up with technological advances.
I have had more bad than good experiences with computers. (Reverse-coded)
I feel I have control over what I do when I use a computer.
I have problems working with computerized items such as cell phones and mp3 players. (Reverse-coded)
I feel comfortable hooking up my computer and installing software.
Tool Use items:
I think that computers and other technological advances have helped to improve our lives.
I would like to have more computerized features in my car such as GPS, DVD player, etc.
I enjoy using Power Point or other computerized visual aids to accompany my presentations.
Positive Attitudes items:
I would prefer to purchase products at a self-checkout than wait for a store clerk.
I prefer to use a handheld device (iPad, Palm, Blackberry, etc.) rather than writing my daily tasks in a traditional day planner.
When learning a new task, I would rather follow an interactive computer program than learn from someone in person.
I would rather shop online than in a physical store.
Negative Attitudes items:
Using a computer is too time consuming (Reverse-coded).
I feel that the use of computers in schools interferes with learning mathematics (Reverse-coded).
I feel that the use of computers in schools negatively affects students' reading and writing abilities (Reverse-coded).
When searching for research information, I would rather read books, magazines, and newspapers than browse the Internet (Reverse-coded).
I feel that computers limit my creativity (Reverse-coded).

TAM Questions.

Questions for the TAM block of the conceptual framework address the three concepts of perceived usefulness, perceived ease of use and social influence. Ten items are measured using the same five-option Likert scale as the Attitudes Toward Computers items and three items are measured using yes-no questions. Four of these ten items include language designed to gauge the influence of stereotype threat and learned helplessness specific to online video creation. The questionnaire includes items adapted from Yang et al. (2009) with minor terminology changes to broaden questions beyond YouTube to include all online video; Yang provided permission to use and adapt the survey items (C. Yang, personal communication, January 19, 2010). Table 7 provides the ten questionnaire items that use the five-option Likert scale.

Table 7

TAM Items measured on Likert Scale

Questionnaire Items
All 10 items scored on 5-option Likert scale: Strongly Disagree, Disagree, Neutral, Agree, or Strongly Agree.
Perceived Ease of Use - Learned Helplessness / Stereotype Threat
Some people have natural ability / talent to work with computers.
I have natural ability / talent to work with computers.
Others sometimes make me feel nervous about my ability to use computers (Reverse-coded).
When working on computer-based projects, I prefer working alone to working with a group. (Reverse-coded)
Perceived Ease of Use - Video creation
It is easy to make online videos.
It is easy to learn how to make online videos.
Perceived Usefulness
Making online videos is a worthwhile activity.
Online videos can influence people’s opinions.
Social Influence
Most people I spend time with make online videos.
I am concerned about privacy controls for online videos. (Reverse-coded).

In addition to the ten Likert-scale items above, Table 8 details the two questions under the perceived ease of use concept and one question under the perceived usefulness concept that are measured on a different metric. The two items under perceived ease of use measure access to high speed Internet and comfort with computer operating systems. The first is a yes-no question to identify students who do not have high-speed access either at home or at school during their high school years. The second is a set of three yes-no questions that asks about comfort level with PC, Mac and Linux/other operating systems. The item under the perceived usefulness concept is a yes-no question to identify students whose parents or family members have explicitly encouraged consideration of multimedia careers.

Table 8

Additional TAM items not scored on Likert scales

Questionnaire Items
All 10 items scored on 5-option Likert scale: Strongly Disagree, Disagree, Neutral, Agree, or Strongly Agree.
Perceived Ease of Use
During your high school years, did you have easy access to a computer with high-speed Internet access? Two Yes or No questions for 'At home' and 'At school.'
Which operating system(s) are you comfortable using? Multiple selections enabled for four choices: PC (IBM, Dell, HP, etc.); Mac (Apple); Linux; and / or Other.
Perceived Usefulness
Has your family encouraged you to consider careers in the fields of computer technology or multimedia? Yes or No.

Data Collection for Questionnaire

The questionnaire was administered in both paper and online formats. This study analyzed data solicited at the point of students' entry, i.e., no later than the end of their first month on campus. All college freshmen are expected to be comfortable completing online questionnaires given that fully 99% of freshmen report conducting online research during high school (Pryor & Hurtado, 2008). However, to address explicitly the possibility that the process of completing an online questionnaire using a computer could confound the results on a topic related to computer usage, a two-part data collection process was conducted.

A small group of freshmen was requested through personal invitation to complete the instrument in paper format during the same time period that a large number of students received email invitations for the online format. Paper surveys were administered at four occasions within the first week of the semester. The first was at a large campus-wide social event for all first-year students at the main library building and the other three occasions were at three different freshman housing dormitories. Manual crosschecks ensured that the same student would not complete the instrument in paper and online formats.

Simultaneously, freshmen across campus received email requests. Freshmen in four email samples, defined below, received direct email with custom hyperlinks. Freshmen across campus also received indirect email requests forwarded by individual faculty and administrators. The online questionnaire was conducted through Qualtrics, a platform that is highly secure and approved by this institution as in compliance with current student privacy and identity protection policies. No identifying information was collected and the server software guarantees that each custom link can lead to only one survey response. The software tracks incomplete questionnaire completions and time to completion. It allows extraction of partial data so that the response rate calculations can be handled separately by email sample. The content of the questionnaire is identical in both paper and online formats but the addition of skip-logic for the online version makes completion slightly faster by eliminating some questions that do not apply. The software has a mechanism for sending reminders only to students who have not responded to direct email requests.

Distribution of instrument.

In order to provide statistically reliable results, the questionnaire had to be completed by enough freshmen to meet sample size requirements. The fall 2009 enrollment of first-year students at the university was close to 2,500. The assumptions of a 95% confidence level, a normal distribution, the largest response fraction possible of 50%, a 5% margin of error and a population size of 2,500 yield a sample size of 333, which would reflect a response rate of 13.3% if the survey were distributed to all freshmen. The actual size of the freshman class at this institution in September 2010 was 2,416, as documented by the admissions office and subsequent calculations use this figure for the population size.

Direct email requests reached 1,200 freshmen, i.e., 49.7% of the population under study. Direct email requests were sent to four samples of students: a random sample provided by the institution's registrar office, a voluntary signup at a large campus-wide social event, a sample based on class enrollment and a voluntary signup at a learning resources center on campus. The first sample of 1,000 email addresses was provided by the institution's registrar's office through a random sampling of all first-year students, and represented 41.4% of the population. The second sample of 104 students was collected by voluntary signup at a large social event in the main library. Over 90% of the freshmen attended this annual event, which lasted for three hours. A candy tray served as a small incentive to attract students to sign up for the online survey via email or to complete the paper survey. (As discussed in a following section, most students declined the paper survey requests.) Of the 137 students who provided email addresses, a matching procedure performed in Microsoft Excel found 33 duplicates with the first sample and these were removed. The third sample of 71 students was received through a faculty member in the History of Science and Society department and represented all freshmen taking classes offered by this department. This list of 123 freshmen included 52 duplicates with the first two samples that were removed. The fourth sample of 25 students was gathered by voluntary signup sheets, publicized by a display poster at the learning resources center on campus; this list of 32 students included 7 duplicates that were removed.

Each student in the four samples received three email messages. The first provided a link to the online survey. The second was a reminder sent one week later only to those students who did not access the custom email link. The third was a second reminder sent two weeks after the initial email, again only to those students who did not access the custom email link. All data collection emails were sent within three weeks of student arrival on campus at this institution. Data collection began on the first day of classes for the semester and ended 30 days later.

In addition to the direct email requests, a large number of students received email survey requests from individual faculty members, dormitory administrators and other staff on campus. This approach was used in order to collect data from freshmen not included in the four samples. Separate links were provided to each individual faculty member and administrator to forward to groups of students; each of these students received a single email request with no follow-up reminders. Some faculty members and administrators reminded students in person at meetings and classes to participate in the study.

Discussions with the freshmen during this phase of data collection revealed a high level of preference for the online format over the paper format. At the freshman social event, several dozen students were approached and all declined to complete the paper survey. In contrast, only one student of the several dozen approached declined to sign up to receive an email request for the online survey. At outreach at several freshman dormitories, freshmen consistently indicated that paper surveys were not of interest, and several seemed surprised to be asked to provide hand-written answers. One student recommended making it clear that this research was for a dissertation and not for marketing research. One student asked if IRB allowed survey collection from students who are under 18 years old, a question that had been addressed successfully during the IRB process. Several students asked questions about the research topic and showed interest in the topic of online video creation.

Response Rates and Non Coverage Error Analysis

The questionnaire received 821 responses representing 34.0% of the population, and substantially exceeding the required sample size of 333 responses. Of the 821 total responses, the vast majority (n= 810) were completed using the online format (382 from direct email requests and 428 from outreach email requests); only 11 responses used the paper format.

The direct email survey participation rate was 31.8%. Participation rates varied from a high of 48.0% for the learning resource center sample, 43.3% for the freshman social sample, 31.8% for the registrar random sample and 23.9% for the course enrollment sample. The highest survey participation rates came from the freshman social and learning resources centers samples where students signed up individually to participate. Reasons for this difference in participation rate across samples likely include the personal connections made with individual students during the outreach process as well as the self-selection of students into these two samples. The latter is in contrast with the random selection of the registrar sample and the course-based selection of the course enrollment sample.

The outreach email survey participation rate was estimated at 30.6%. The 428 outreach email responses came as a result of outreach efforts by individual faculty and administrators. Two faculty members forwarded request emails to students in their courses, resulting in 192 responses. Eight administrators forwarded request emails to students in specific freshman housing or student groups, resulting in 245 responses. The total number of students reached by outreach email who were not already reached by one of the direct email samples is estimated to be around 1,400. There was considerable, unavoidable overlap across requests which clouds the calculation of response rates for this set of responses. A student could have received a direct email request as well as outreach emails from administrators and / or faculty members.

The paper format survey participation rate was 15.0%. Despite several attempts in a variety of contexts to request about 100 freshmen to complete the paper survey, only 15 students agreed to complete the paper survey. Of these, 9 students completed and returned the survey immediately and another 2 students returned the survey at a later date. The 11 paper surveys included over-representation of some ethnicity categories and constituted a sample is too small to compared statistically with the dataset of 741 online surveys. Of the 11 students who completed the paper survey, five were African American (non Hispanic), three were Asian (non Hispanic), two were Hispanic and one was in the Other/Race Unknown (non Hispanic) category.

Completion rates were high for both formats – 78.5% for the online format and 100% for the paper format. The outreach email distribution for the online format reached a few upperclassmen. Since this study includes only first-year students, upperclassmen were then screened out by the first question on the survey. Of the 810 online survey responses received, 48 students indicated they were upperclassmen status, skipping to the end of the instrument and another 21 students exited without starting the survey. This reduced the dataset by 69 responses, providing 741 usable responses. Of these responses, 582 students completed the survey in its entirety.

The 741 usable responses from the online format and the 11 usable responses from the paper format were combined into a single dataset of 752 responses for all subsequent analysis. The paper and online surveys included language to indicate that students should complete the survey once. No duplicates were received in the email addresses submitted to the raffle for completion. The survey system provided no indication based on IP address that any student completed the survey more than once. The incentive for the questionnaire was a raffle for five $50 gift certificates to a list of local restaurants and shops. Five students were selected to receive $50 gift certificates to local vendors through a raffle; 491 of the 752 responses provided email addresses for the raffle.

Ideally, the full population of first-year students would have received either the online or paper versions of the questionnaire instrument. In reality, it is estimated that about 80% of the population received requests to complete the questionnaire. The four direct email samples reached 49.7% of the population, and it is estimated that the outreach emails and paper survey requests reached an additional 30% of the population. The representative sample size of 333 represents 13.8% of the population of 2,416 freshmen, and the received usable responses from 752 students represent 31.1% of the population.

Non-coverage error is defined as systematic non-coverage of segments of the population. Since the outreach was conducted through neutral methods such as the freshman social, freshman housing and large entry-level freshman lecture courses, no systematic non-coverage error is likely. Table 9 explores non-coverage error for variables where institutional data is available and defined consistently with this study, comparing characteristics of the sample and population. The similarity in the characteristics of the sample and population demonstrate that the sample is representative of the population in terms of gender, ethnicity and school affiliation.

Table 9

Sample and Population Comparison

Variable	Sample Percent (%)	Population Percent (%)
Number of students	31.1	100.0
Gender Female	58.4	51.1
Ethnicity		
African American (non Hispanic)	7.8	9.0
Asian (non Hispanic)	25.3	24.5
Hispanic	8.2	8.7
Immigrant Status		
International Student	10.1	11.1
School Affiliation within university		
Liberal Arts School	57.2	60.0
Business School	20.5	19.5
Engineering School	18.0	15.1
Nursing School	4.5	5.4

Note: Data compiled from institutional profile of students enrolled in September 2010.

Definition of Variables

This section defines the variables in the conceptual framework, connects variables to the three research questions, and explains the connection between the variables and the questionnaire. The conceptual framework in Figure 1 includes eleven components in three blocks to measure the independent variables. The ‘demographics’ block includes gender, ethnicity / immigrant status, socioeconomic status and high school size. The Attitudes Toward Computers block includes the four components of computer confidence, tool use, positive attitudes toward computers and negative attitudes toward computers as detailed in Morris et al. (2009). The TAM block includes the three components of perceived ease of use, perceived usefulness and social influence.

Dependent variables.

The study includes three dependent variables. The first dependent variable is the dichotomous (yes-no) response, if a student has created one or more online videos, suitable for analysis by logistic regression. The second dependent variable includes nine separate categories reflecting nine specific roles played in video creation: performance in video; creation of a slideshow; use of a cell phone or webcam; use of a handheld video camera; creation of animation; addition of music, images or titles; fixing of audio or video quality; editing of video clips; and full production of a video. Some of the nine roles reflect a high level of time and effort commitment (e.g., producing video, editing multiple clips, etc.), while others reflect casual and / or low use of technology (e.g., cell phone uploads, performing in videos while others manage the technology). As a result, a simple sum of the number of roles played in video creation has limited explanatory power. Therefore, the nine categories are recoded into a series of dichotomous (yes-no) variables for all responses that are also analyzed using logistic regression.

The third dependent variable is the number of online videos created among those who created at least one video. Students reported creating between 1 and 100 videos. The frequency distribution had peaks around round-number values of 10 and 50 and a long right-sided tail. Given this distribution, the variable is recoded into four-categories: 1 to 2 videos (reference category), 3 to 5 videos (low), 6 to 10 videos (medium), and more than 10 videos (high). This four-category variable is analyzed using multinomial logistic regression.

Descriptive statistics are also used to analyze the reasons why students decide to make videos, participation in school projects, self-perception of expertise in video creation and types of video editing software used. Students used an open-ended text box to list the video editing software titles used. Of the 407 students who reported video creation experience, 243 provided responses to the open-ended text field about the video editing software they used. Some video editing software titles require a substantially greater time and effort investment to master than others. Student responses were first analyzed to create a list of all the software titles mentioned. These titles were sorted into three categories to indicate low, medium and high complexity. The categories draw on the work of Larraga and Coleman (2007) to sort common video-editing tools software in increasing order of difficulty: Photo Booth, Windows Movie Maker, iMovie, Final Cut Pro, Avid and Adobe Premiere. Current software reviews from a variety of online sources were consulted to determine the characteristics of each software program mentioned in student responses. Criteria used for categorization are the price of the software program, reviews of its ease of use on popular websites, side-by-side comparisons with similar programs and analysis of the level of features offered. Table 10 summarizes the categories and software titles.

Table 10

Video Software Complexity Coding

Complexity	Software Name (Publisher), reviews used.	Characteristics
Low	CamStudio (TechSmith), (Hoeg, 2006). Flip (Cisco), (Brighthub.com, 2010). Microsoft Movie Maker (Microsoft), (PC Magazine, 2008). QuickTime (Apple), (CNET, 2008). ULead (Corel), (Top Ten Reviews.com, 2011a).	Free software, advertized as easy to use, allowing none to minimal level of clip and audio/video editing, designed for popular market.
Medium	iMovie (Apple), (MacWorld, 2010).	Free software, advertized as powerful, allowing clip and audio/video editing, designed for popular market.
High	Casablanca Kron (TechMedia), (TechMedia, 2011). FinalCut (Apple), (PC Magazine, 2005). Nero (Nero), (Top Ten Reviews.com, 2011). Pinnacle (Avid), (Top Ten Reviews.com, 2011b). Premiere (Adobe), (Top Ten Reviews.com, 2011b). Vegas (Sony), (Top Ten Reviews.com, 2011b).	Explicit software license costs, requires high-end hardware, emphasizes fine editing features, designed for professional video editors.

When students listed more than one software title, the title with the highest complexity rating was retained. Therefore, if a student had listed both Final Cut and Casablanca Kron, that student is counted only once under Casablanca Kron. This eliminates the possibility of double-counting students and allows the calculation of the percentages of students using video editing software at different levels of complexity.

Independent variables – Demographics block.

The demographic variables in the regression analyses are gender, race/ethnicity, immigrant status and high school size. Gender is measured as male or female. Race / ethnicity is designated with five non-overlapping categories of African American (non Hispanic); Asian (non Hispanic); Hispanic; Other/Race Unknown (non Hispanic) and reference category of White (non Hispanic). The five non-overlapping categories were constructed through a series of steps. First, the Other/Unknown designation is given to responses with primary ethnicity selection of Native American, Native Hawaiian ethnicity, Prefer not to answer and no response, creating four categories of White, African American, Asian and Other/Unknown. A total of 38 students chose a secondary ethnicity selection: 17 designated White, 10 designated American Indian, 8 designated Asian, 2 designated African American and 1 designated Native Hawaiian. Students in the Other/Unknown category for primary ethnicity selection who designated a secondary ethnicity selection in one of the other three categories are moved to the secondary category. Data on Hispanic ethnicity was then combined with ethnicity data to create five non-overlapping ethnicity categories. Consideration of Hispanic ethnicity affected a small number of students. Four students who indicated both Asian and Hispanic, two students who indicated both African American and Hispanic, 31 students who indicated both White and Hispanic and 25 students who indicated both Other/Race Unknown and Hispanic are counted in the Hispanic category.

Immigrant status was measured with the four categories of International Student, First Generation, Second Generation and the reference category of Non-Immigrant. The last two choices on the questionnaire of 'Not a first- or second-generation immigrant' and

'Prefer not to answer' were combined to create the reference category of Non-Immigrant. Low socioeconomic status was constructed as a yes-no variable with yes indicating those students who are either eligible for Pell grants or have both parents with no more than a high school education.

High school size was a four category variable to indicate student enrollment taken directly from the corresponding questionnaire item. The overlap between small high school size and videos made for required school projects was minimal. Only 81 students reported attending a small high school with less than 300 students, and of these students, only 35 reported having created online videos. Of these 35 students, 15 reported that the majority of their videos were for school-required projects, with an even breakdown of 8 women and 7 men. This set of 15 students represents 3.7% of the 407 students reporting online video creation experience. As a result, high school size can be considered as an indicator for infrastructure and facilities provided by the school in support of online video creation, implying that a student in a larger high school would have a greater probability of learning video creation skills as part of their high school curriculum.

Independent variables – Attitudes Toward Computers.

The factor analysis processes documented by Morris et al. (2009) were replicated for the 17 items adapted from the ATCUS v2.0 instrument. The overall internal consistency reliability estimate (Cronbach's alpha) for the set of 17 items was 0.7, comparable to their result of 0.83 (Morris et al., 2009). Using principal component factor analysis and varimax rotation, the four factor solution they recommend was replicated with this study's data. Internal consistency levels were adequate for three of the four subscales but low for one subscale. The internal consistency levels (Cronbach's alpha) were 0.70 for computer confidence, 0.56 for tool use, 0.43 for positive attitudes and 0.63 for negative attitudes, somewhat lower than Morris et al.'s results of 0.64, 0.71, 0.69 and 0.58 respectively. As expected, each subscale successfully generated exactly one factor with eigenvalue greater than 1, thereby producing four factors of Computer Confidence, Tool Use, Positive Attitudes and Negative Attitudes.

Several reasons may underlie the slightly lower levels of internal consistency for the subscales in this study compared to the results from Morris et al. (2009). First, this study used 17 of the 22 items in the ATCUS v2.0 instrument used in the Morris et al. study. Second, Morris et al. collected data in 2008 and this study collected data in 2010. Attitudes toward use of particular technologies by undergraduate students may have changed during this two-year period. Third, Morris et al. (2009) collected data from undergraduates at a large mid-western state university, whereas this study collected data from a northeastern highly selective research university. Table 11 provides the factor loadings for the four factors measuring attitudes toward computers.

Table 11

Details on Four Factors for Attitudes Toward Computers

Factor and Questionnaire Items	Factor Loading	Internal consistency (alpha)	Proportion variance explained
Computer Confidence Factor – Composite of 5 items		0.70	0.46
I like to keep up with technological advances.	0.71		
I have had more bad than good experiences with computers. (Reverse-coded)	0.64		
I feel I have control over what I do when I use a computer.	0.61		
I have problems working with computerized items such as cell phones and mp3 players. (Reverse-coded)	0.70		
I feel comfortable hooking up my computer and installing software.	0.74		
Tool Use Factor – Composite of 3 items		0.56	0.53
I think that computers and other technological advances have helped to improve our lives.	0.70		
I would like to have more computerized features in my car such as GPS, DVD player, etc.	0.76		
I enjoy using Power Point or other computerized visual aids to accompany my presentations.	0.73		
Positive Attitudes Factor – Composite of 4 items		0.43	0.37
I would prefer to purchase products at a self-checkout than wait for a store clerk.	0.55		
I prefer to use a handheld device (iPad, Palm, Blackberry, etc.) rather than writing my daily tasks in a traditional day planner.	0.67		
When learning a new task, I would rather follow an interactive computer program than learn from someone in person.	0.54		
I would rather shop online than in a physical store.	0.66		

Factor and Questionnaire Items	Factor Loading	Internal consistency (alpha)	Proportion variance explained
Negative Attitudes Factor – Composite of 5 items		0.63	0.41
Using a computer is too time consuming (Reverse-coded).	0.61		
I feel that the use of computers in schools interferes with learning mathematics (Reverse-coded).	0.70		
I feel that the use of computers in schools negatively affects students' reading and writing abilities (Reverse-coded).	0.75		
When searching for research information, I would rather read books, magazines, and newspapers than browse the Internet (Reverse-coded).	0.44		
I feel that computers limit my creativity (Reverse-coded).	0.64		

Independent variables – TAM block.

Principal component factor analysis with varimax rotation was also used to create four factors from the ten Likert-scale items for the TAM. Since these items were created and assembled for this study, no prior model from the literature was available to guide the creation of subscales. Factor analysis of the 10 items resulted in four factors, each with eigenvalue greater than 1, named Ease of Video Creation, Value of Video Creation, Self-perception of Ability and Comfort with Social Risk. These four factors correspond to the TAM concepts of perceived ease of use, perceived usefulness and social influence. Table 12 provides the factor loadings for the four factors: 1 of the 10 items loads on more than one factor, and factor loadings with absolute value lower than 0.4 are not listed. Since multiple items load on multiple factors, calculation of internal consistency (alpha) values within each factor was not possible. Therefore, the Kaiser-Meyer-Olkin test of sampling adequacy was conducted to evaluate the validity of the factor analysis, producing an overall score of 0.61, higher than the minimum acceptable level of 0.5 (Ferguson & Cox, 1993).

Table 12

Details on Four Factors for Technology Acceptance Model (TAM)

Factors and Questionnaire Items	Ease of Video Creation	Value of Video Creation	Self-perception of Ability	Comfort with Social Risk
Internal Consistency Level (alpha) for all ten TAM items			0.51	
Kaiser-Meyer-Olkin test of sampling adequacy			0.61	
Cumulative Proportion of Variance Explained			0.59	
Proportion of Variance Explained by each factor	0.22	0.14	0.13	0.10
Factor loadings for the 10 TAM items:				
It is easy to make online videos	0.85			
It is easy to learn how to make online videos	0.82			
Making online videos is a worthwhile activity		0.65		
Online videos can influence people's opinions		0.56		
Most people I spend time with make online videos		0.50		
Others sometimes make me feel nervous about my ability to use computers (Reverse-coded)		-0.51		
I have natural ability / talent to work with computers			0.77	
Some people have natural ability / talent to work with computers.			-0.67	
When working on computer-based projects, I prefer working alone to working with a group. (Reverse-coded)			-0.49	0.47
I am concerned about privacy controls for online videos. (Reverse-coded)				0.87

The other three dimensions for the TAM block measure: access to high speed Internet access, family support for careers in multimedia; and comfort with PC, Mac, Linux and other operating systems. Each of these items is measured as a yes/no variable. Data for Linux and other operating systems is combined into one variable. The question about access to high speed Internet access was intended to capture the consequences of lack of physical infrastructure. Only 1.1% of the students reported no access to high speed Internet; due to this low level of relevance to the dataset, this variable is not included in the analyses. The variables for operating system experience and family support for careers in multimedia are included as separate individual items.

Missing Data Analysis

The full sample includes the 752 usable responses, of which 593 were complete. A few students did not respond to individual items in the middle of the questionnaire but no consistent trends emerged for skipped items.

Of the 752 records, 557 had usable data in the fields needed for the regression models. The other 195 records (25.9%) had missing data in one or more fields needed. Through listwise deletion, these records were excluded from the analytic sample. Table 13 provides missing data analysis for the included and excluded responses. The percent of excluded responses from women (13.5%) is slightly higher than the percent of excluded responses from men (9.9%), which suggests a small potential bias in the analytic sample. One mitigating factor is that both the analytic and full samples include more women than men, which assists in boosting the sample size for women. With the exception of the Other / Race Unknown category, the analytic sample is a strong representation of the full sample, including between 74.1% and 96.1% of the full sample.

Table 13

Missing Data Analysis for Analytic Sample

Variable	N	Analytic Sample		
		Total Percent (%)	Included Percent (%)	Excluded Percent (%)
All responses	752	100.0	74.1	25.9
Gender				
Female	370	100.0	86.5	13.5
Male	263	100.0	90.1	9.9
Unknown	119	100.0	0.0	100.0
Ethnicity				
African American (non Hispanic)	59	100.0	83.1	16.9
Asian (non Hispanic)	190	100.0	87.9	12.1
Hispanic	62	100.0	87.1	12.9
Other/Race Unknown (non Hispanic)	142	100.0	11.3	88.7
White (non Hispanic)	299	100.0	90.6	9.4
Immigrant Status				
International Student	60	100.0	86.7	13.3
First Generation	66	100.0	92.4	7.6
Second Generation	163	100.0	93.3	6.7
Not an Immigrant	304	100.0	96.1	3.9
High School Size				
Fewer than 300 students	81	100.0	90.1	9.9
300 to 999 students	236	100.0	91.5	8.5
1,000 to 2,000 students	201	100.0	82.1	17.9
More than 2,000 students	115	100.0	89.6	10.4
School Affiliation				
Liberal Arts School	359	100.0	87.5	12.5
Business School	129	100.0	86.0	14.0
Engineering School	113	100.0	92.0	8.0
Nursing School	28	100.0	89.3	10.7
Low Socioeconomic Status	160	100.0	88.7	11.3

About 11% of respondents were classified as Other / Race Unknown. Further exploration revealed that the students who did not complete the race and ethnicity questions on the survey also did not complete the majority of the items on attitudes toward computers or TAM. For example, only 27 of the 142 students who left the ethnicity question blank (and therefore are in the Other / Race Unknown category) completed the items on attitudes toward computers. Because of this pattern of missing data, the analytic sample does not adequately represent the experiences of students in the Other/Race Unknown category.

Summary of Variables

Table 14 provides a summary of the variables used in the descriptive and regression analyses for this study. The variables that are only included in the descriptive analyses are listed first, followed by the dependent and independent variables. The independent variables are labeled and organized by the blocked structure from the conceptual framework. Table 15 provides descriptive statistics for the sample. Data on online video creation and the nine roles played in creation of online videos are relevant for all students in the sample. Data on the numbers of videos made, types of videos made, self-rating of video creation expertise, participation in school video projects and use of video editing software are collected through questions that are not shown, by skip logic, to students who have never made a video. Therefore, the number of responses for these variables should be considered relative to just the 407 students who reported creating videos and then encountered this set of questions.

Table 14

Summary of Variables Included in Descriptive and Regression Analyses

Variables	Definition
Variables used only for Descriptive Analyses	
Videos for required school projects	Most videos were made for required school projects; 1 = yes, 0 = no.
Self-rating in Video Creation	Three categories: 1 = Beginner, 2 = Intermediate, 3 = Expert
Video Editing Software Complexity Level	Three categories: 1 = Low complexity, 2 = Medium complexity, 3 = High complexity
Importance in decision to create video:	Each of the five variables is scored on a five-point Likert scale: Not important / A little important / Somewhat important / Important / Very Important
Friends and classmates	
Fame, online reputation	
Having Fun on a Computer	
Influencing others, advocacy	
Desire to improve video creation skills	
No high speed Internet access	High speed Internet not available at home or school during high school years. 1 = yes, 0 = no.
Dependent Variables	Descriptor
Video Creation	One or more online videos created; 1 = yes, 0 = no.
Number of Videos Created	0 = Reference level of one to two, 1 = Low level of 3 to 5, 2 = Medium level of 6 to 10, 3 = High level of more than 10.
Roles played in Video Creation	Multiple selection enabled; 1 = yes, 0 = no. Nine possible roles:
Video Performance	I performed in the video(s)
Video Slideshow	I created a simple slideshow with photos and music
Video Cell phone / Webcam	I clicked record, then stop, then uploaded from a cell-phone or built-in webcam
Video Handheld Camera	I used a handheld video-camera, transferred video to a computer and uploaded
Video Animation	I created a machinima, animation or other computer-generated video
Video Music / Images / Titles	I added music, still images or titles
Video Fix Audio Video Quality	I fixed audio or video quality

Variables	Definition
Video Clip Editing	I worked with several clips, did substantial editing
Video Full Production	I planned, directed or produced the video
Independent Variables - Demographic	
Gender	1 = female, 0 = male
Ethnicity	Five categories: African American, non-Hispanic; Asian, non-Hispanic; Hispanic; Other/Race Unknown; White, non-Hispanic (reference category).
Immigrant Status	Four categories: International Student; First Generation; Second Generation; Not an Immigrant (reference category)
Low Socioeconomic Status	Eligible for Pell grant or both parents have no more than a high school education. 1=yes, 0=no.
High School Size	Four categories for number of students: Fewer than 300; 300 to 999 (reference category); 1,000 to 2,000; and more than 2,000.
Independent Variables– Attitudes Toward Computers	
Computer Confidence	Factor of 5 items
Tool Use	Factor of 3 items.
Positive Attitudes	Factor of 4 items.
Negative Attitudes	Factor of 5 items
Independent Variables - TAM	
Ease of Video Creation	Factor constructed from 10 items
Value of Video Creation	Factor constructed from 10 items
Self-perception of Ability	Factor constructed from 10 items
Comfort with Social Risk	Factor constructed from 10 items
Computer platform experience	Multiple choices enabled across the three platform choices. For each of the three choices, 1=yes, 0=no.
PC	
Mac	
Linux or Other	
Family career encouragement	Family encouragement for careers in computer science, multimedia design. 1=yes, 0=no.

Table 15

Descriptive Statistics for Analysis Sample

Variable and Descriptor	N	Percent (%)	Mean	Std Dev	Minimum	Maximum
Variables used only for Descriptive Analyses						
Videos for required school projects	396	44.9			0	1
Self-rating in Video Creation	397				1	3
Video Editing Software Complexity Level	243				1	3
Importance in decision to create video:						
Friends and classmates	365		3.5	1.17	1	5
Fame, online reputation	363		1.6	0.88	1	5
Having Fun on a Computer	365		3.0	1.18	1	5
Influencing others, advocacy	363		2.1	1.12	1	5
Desire to improve video creation skills	363		2.3	1.19	1	5
No high speed Internet access	634	1.1			0	1
Dependent Variables						
Video Creation	752	54.1			0	1
Category for Number of Videos Created	383				0	3
Roles played in video creation	713				0	1
Video Performance		40.9				
Video Slideshow		25.0				
Video Cell phone / Webcam		23.3				
Video Handheld Camera		30.2				
Video Animation / Machinima		3.4				
Video Music / Images / Titles		30.6				
Video Fix Audio Video Quality		16.0				
Video Clip Editing		22.1				
Video Full Production		17.1				

Variable and Descriptor	N	Percent (%)	Mean	Std Dev	Minimum	Maximum
Demographic Variables						
Gender	633	58.5			0	1
Ethnicity	752				0	1
African American (non Hispanic)		7.8				
Asian (non Hispanic)		25.3				
Hispanic		8.2				
Other/Race Unknown (non Hispanic)		18.9				
White (non Hispanic)		39.8				
Immigrant Status	593				0	1
International Student		10.1				
First Generation		11.1				
Second Generation		27.5				
Not an Immigrant		51.3				
Low Socioeconomic Status	630	25.4			0	1
High School Size	633				0	1
Fewer than 300 students		12.8				
300 to 999 students		37.3				
1,000 to 2,000 students		31.8				
More than 2,000 students		18.2				
Attitudes Toward Computers Variables						
Computer Confidence Factor	621		0	1	-4.2	1.8
Tool Use Factor	624		0	1	-4.9	1.8
Positive Attitudes Factor	622		0	1	-2.9	3.6
Negative Attitudes Factor	618		0	1	-3.3	2.1
TAM Variables						
Ease of Video Creation Factor	661		0	1	-2.9	2.8
Value of Video Creation Factor	661		0	1	-4.4	3.4
Self-perception of Ability Factor	661		0	1	-3.7	2.6
Comfort with Social Risk Factor	661		0	1	-2.7	3.0

Variable and Descriptor	N	Percent (%)	Mean	Std Dev	Minimum	Maximum
Computer platform experience[d]	632				0	1
PC (IBM, HP, Dell, etc.)		85.0				
Macintosh (Apple)		66.0				
Linux/other operating systems		5.9				
Family career encouragement	632	23.3			0	1

d: 59% of the sample reported experience with both Mac and PC operating systems

Quantitative Analysis Plan

The research questions are first addressed with descriptive analyses. Then, logistic and multinomial logistic regression analyses are used, as appropriate, given the construction of the dependent variables.

Blocked entry of the independent variables is used to address the three research questions. The first research question explores gender differences in mastery of online video creation; the corresponding regression models include the primary independent variable of gender, and the other demographic variables of race / ethnicity, immigrant status, socioeconomic status and high school size. The second research question explores how the theoretical perspectives of self-efficacy, technology acceptance, stereotype threat and learned helplessness inform understanding of such gender differences. To address this research question, the four factors for Attitudes Toward Computers are added to the regression model that contains the demographic variables. Next the four TAM factors and individual TAM variables are added. Goodness of fit measures is evaluated for each step of the blocked regression process. The Attitudes Toward Computers and TAM factors and the individual TAM variables are evaluated in terms of their contribution to explaining differences across genders. Finally, the third research question considers the interaction between gender and computer confidence by evaluating the significance of adding an interaction variable combining the Computer Confidence Factor and gender to the complete regression model.

The primary dependent variable is a yes-no measure of whether a student has created online videos. The analyses for this variable use logistic regression analysis. Additional analyses are conducted for students who created at least one online video.

First, the relationship between gender and the nine roles played in video creation is explored using first descriptive analyses and then logistic regression analysis for each role. Second, for students who have created online videos, the four-category dependent variable for the number of online videos created is analyzed using multinomial logistic regression.

Qualitative Inquiry

The qualitative data collection process was designed to complement the quantitative analyses and provide more detail about video editing behaviors, especially with respect to gender roles. Data were collected using focus groups and interviews. The protocol was designed with guidance from faculty on the dissertation committee and from graduate students in the department to explore aspects of the research questions not fully covered by the questionnaire. The qualitative inquiry was conducted immediately after the collection of questionnaire data. Two of the participating students mentioned that they had completed the questionnaire during the discussions.

The focus group protocol, detailed in Appendix 3, began with distribution of consent forms and refreshments. Each student was asked to verbally approve audio recording and return a signed consent form before recording commenced. Each student was given a sequentially numbered index card and asked to say that number before participating in the discussion. This helped to maintain privacy within groups for students who did not already know each other. A statement about privacy concerns was read to inform participants that their privacy will be protected through the use of pseudonyms for direct quotes and that the audio recordings would be destroyed after seven years. Participants were requested to maintain the confidentiality of their peers for topics discussed in the session.

Students were asked three questions with time for responses from each participant and within-group discussion after each question. The three questions were: What is your experience with creating online videos?; What was easy about making online videos?; and What was difficult or challenging about making online videos? Up to six follow-up questions were introduced based on the flow of conversation. The follow-up questions were: How does concern about privacy affect video creation?; Do you expect to see differences between men and women in video creation?; Is making a video harder or easier than other ways to use technology?; Do students know which of their friends make videos?; Does making videos increase a person's social status?; and What reasons might prevent a student from creating videos? Three one-on-one interviews were conducted in cases when scheduling logistics prevented the organization of focus groups for interested students. Pizza or food store gift certificates (for five dollars each) were provided to each participant and meetings were held in neutral, everyday settings on campus such as dormitories, public meeting spaces and classrooms.

Participants were recruited through personal contact, display posters in dormitories, outreach emails from faculty teaching two freshman writing seminars, outreach emails and in-person requests by administrators at the nursing and engineering schools at this institution, outreach emails from administrators at three freshman dormitories and outreach email from two undergraduate students to classmates. Focus groups were constructed of using a single-gender format so that students could speak more freely about gender-related issues. Sessions lasted between 30 and 60 minutes each.

The audio recordings were manually transcribed and then organized into a series of blurbs. Pseudonyms were created to mask privacy of individual students; quotes are presented by pseudonym only. Each participant was assigned a group number and a participant number. Each blurb was assigned to the corresponding participant and group to enable analysis of blurbs by participant and by group context.

Using the prominent phrases from the conceptual framework and literature review, a set of 35 codes was constructed and each blurb was tagged with all applicable codes. Blurbs that discussed video editing tasks were tagged with keywords. These keywords were then coded by complexity of technology use corresponding to the 'roles played in video creation' defined in the questionnaire. If a blurb revealed a concept not explicitly mentioned in the set of codes, an additional code was created and added to the set. Initial coding of the qualitative dataset created a set of 46 codes.

Many blurbs received more than one code during the initial coding, so a second level of coding assigned one primary code to each blurb. Using the blurbs and the participant and group numbers, each participant was then assigned a level of revealed experience with video editing and placed in one of four categories: no experience, beginner, intermediate and advanced.

The set of 46 codes was collapsed into nine broad themes of TAM, video editing technologies, social context, stereotype threat, learned helplessness, demographic issues, gender roles, self versus others and objectives for created videos. Conversations within group members were analyzed to look at agreement and disagreement within discussion of a topic. Quotes that provided a succinct and clear expression of the nine themes were flagged for inclusion in this document.

Students frequently resorted to the three verbal placeholder of “like,” “kind of,” and “really” when responding to the discussion questions. In some sessions, these words occurred several times within a single sentence. In order to reduce distraction for the reader, the words “like,” “kind of,” and “really” were excised from quotes when they represent a verbal placeholder.

Limitations of Research Design

This is a single-institution study that focuses on understanding the relationship between gender and mastery of online video creation among freshmen attending one highly selective research university. This study focuses on students attending a single institution in order to simplify the process of looking at the fast-evolving topic of online video creation in some depth. These results are generalizable to comparable institutions with similar student bodies. As described earlier, this institution is one of 263 research universities, and one of 96 universities labeled as “Very High Research Activity.” Compared with other research universities, the selected university is more academically selective and has higher graduation rates, a higher share of immigrant / international students (defined as having non-resident U.S. immigration status), and a higher share of high-income students.

The questionnaire had a high response rate and a high completion rate. Therefore, it is likely that the data are representative of this institution. However, a similar study at another institution may yield different results based on the prior knowledge of entering students, the technology infrastructure available to the students during high school and other demographic and location-specific factors.

Several questions on the questionnaire were created for this study and did not undergo strict psychometric testing. Multiple interpretations may have been possible especially for the items created for the TAM factor and the roles played in video creation. For example, the item "I planned, directed or produced the video" may have different meanings to students at different levels of video creation.

The regression analysis considers gender and the other variables without explicit consideration of clustering within each sub-population. About one-third of the women who reported creating videos also had experience with video-editing tasks, and 34 women reported creating more than five videos. Cluster analysis of women with significant video creation experience may yield further insights into the relevance of the conceptual framework.

This study collects information on physical gender only, although this is only one of the aspects of gender that needs to be considered (Harris, 2008). The effects of gender stereotype (Cooper 2003), psychological gender (Joiner et al., 2005) and feminine / masculine gender tendencies (Harris, 2008) may affect the overall impact of gender, and may need to be incorporated explicitly through an instrument such as the Bern Sex Roles Inventory test (Barker & Aspray, 2006). Future studies may want to include explicit measures of gender identity construction for further gender-based differentiation.

Qualitative inquiry was a small component of this study. Although this component yielded useful insights, it cannot be considered extensive. A different set of outreach mechanisms may have brought in more perspectives from women with expertise in online video creation as well as from men without online video creation experience. Inclusion of such students would likely provide more nuanced understanding of gender differences in online video creation.

Notwithstanding these limitations, this study provides a valuable conceptual structure for understanding gender differences in online video creation. As a newly popular activity, online video creation can be partially understood using the conceptual frameworks created for understanding older technologies. This study begins the process of connecting these conceptual frameworks to the experiences of first-year students today as they explore online video creation.

CHAPTER 4: Results

This chapter presents the findings from this study, organized around the three research questions. The three questions are addressed through descriptive analyses, regression analyses and qualitative inquiry. The first question about gender differences in mastery of online video creation is addressed by descriptive analysis of video creation and logistic regression analysis. The second research question brings in the theoretical perspectives of self-efficacy, technology acceptance, stereotype threat and learned helplessness as well as the role of demographic characteristics; it is addressed through descriptive statistics as well as logistic regression and multinomial logistic regression. The third research question explores whether the relationship between confidence using computers and mastery of online video creation varies by gender. This question is addressed by testing an interaction variable between gender and computer confidence in the full logistic regression model for online video creation. Qualitative inquiry results are then discussed and connections drawn with the quantitative analysis results.

Gender Differences in Online Video Creation

The first research question asks, for first-year traditional-age college students attending a highly selective research university, what gender differences exist in mastery of online video creation? Descriptive analyses reveal gender differences in some aspects of online video creation but not in other aspects.

Two key findings are the gender differentials for students who make online videos and for students who make online videos for required school projects. Table 16 shows that a higher percentage of men (58%) report that they have made online videos than women (49%). In addition, a higher percentage of men (55%) report that they have made online videos for required school projects than women (41%).

Descriptive analyses also revealed gender differences for five of the nine roles in video creation that were examined. Table 16 shows that a higher percentage of men (86%) report they have performed in online videos than women (77%). A higher percentage of men (68%) than women (52%) report they have added music, images and/ or titles to their videos. A higher percentage of men (39%) than women (26%) report they have improved the video and /or audio quality of their videos through editing. A higher percentage of men (52%) than women (37%) reported substantial video editing, working with multiple video clips. Lastly, a higher percentage of men (41%) than women (30%) report involvement in video production. At over 15 percentage points each, the gender gaps are especially large for two popular video editing roles: working with multiple clips and adding music, text or images. Four of the five roles with significant gender differentials require use of video editing software and commitment of time to video editing tasks: adding music, images and/ or titles, improving video and /or audio quality, editing with multiple video clips and planning, directing or producing video. The percentages of men and women reporting the creation of slideshow videos and animation videos, and the use of cell phones, webcams, handheld cameras are similar.

Students rated themselves as beginner, intermediate or expert at video creation, with large gender gaps in the self-rating level. Table 16 shows that a higher percentage of women than men (81% versus 59%) ranked themselves as beginner. The percentage of men who ranked themselves as intermediate level (36%) was almost twice as high as the percentage of women (19%). The percentage of men who ranked themselves at the expert level was 4.5%, while no women chose this rating. Men and women reported a similar number of videos created; on average, respondents created 5.1 videos each.

Table 16

Percentage of Men and Women who Reported Video Creation

	Total Percent (%)	Males Percent (%)	Females Percent (%)	Gender Gap (M-F) Percentage points (%)
Created an online video	54.1	58.6	48.6	9.9*
Videos required school projects	44.9	54.5	40.6	14.0*
Roles played in video creation				
Video Performance	79.3	86.0	76.7	9.3*
Video Slideshow	48.4	51.3	45.0	6.3
Video Cell phone / Webcam	45.1	45.3	44.4	0.9
Video Handheld Camera	58.4	64.0	55.0	9.0
Video Animation	6.5	9.3	4.4	4.9
Video Music / Images / Titles	59.2	68.0	51.7	16.3**
Video Fix Audio Video Quality	31.0	39.3	26.1	13.2*
Video Clip Editing	42.7	52.0	36.7	15.3**
Video Full Production	33.2	40.7	30.0	10.7*
Used Video Editing Software	59.7	72.1	62.2	9.9
Self-rating in video creation				
Beginner	71.8	59.1	81.1	-22.0***
Intermediate	25.9	36.4	18.9	17.5***
Expert	2.3	4.5	0.0	4.5***
Number of Videos Created (for those who created any)				
Starter (one to two videos)	33.1	27.3	38.1	-10.7
Low (three to five videos)	44.5	46.7	42.6	4.1
Medium (six to ten videos)	15.0	16.7	13.6	3.0
High (more than ten videos)	7.4	9.3	5.7	3.7

Note: *** $p < .001$; ** $p < .01$; * $p < .05$

Table 17 documents gender differentials in video creation differed by race / ethnicity category and immigrant status. For Asians, a higher percentage of men (70%) than women (47%) reported creating videos. For African American, Hispanic, White and Other or Race Unknown students, no significant differences emerged by gender. For second-generation immigrant students, a higher percentage of men (75%) than women (54%) reported creating videos. At over 20 percentage points each, the large gender gaps indicate that Asian ethnicity and second-generation immigrant status may have strong relationships with online video creation. As mentioned earlier, respondents in the Other / Race Unknown category are missing data in several fields. Gender data are available only for 23 (16.2%) of the 142 respondents in the Other / Race Unknown category.

Table 17

Percentage of Men and Women Reporting Video Creation by Ethnicity, Immigrant Status

Characteristic	N	Total Percent (%)	Males Percent (%)	Females Percent (%)	Gender Gap (M-F) Percent (%)
All students	752	54.1	58.6	48.6	9.9*
Ethnicity Category					
Asian (non Hispanic)	190	55.3	70.1	47.2	23.0**
African American (non Hispanic)	59	52.5	40.9	59.5	-18.6
Hispanic	62	45.2	48.4	41.9	6.5
White (non Hispanic)	299	52.5	57.8	48.2	9.6
Other or Race Unknown (non Hispanic)	142	60.6	62.5	53.3	9.2
Immigrant Status					
Non-immigrants	304	50.3	53.0	48.3	4.8
Second-generation immigrants	163	63.8	75.3	54.4	20.9**
First-generation immigrants	66	54.5	65.2	48.8	16.4
International Students	60	26.6	23.8	28.2	-4.4

Note: *** p < .001; ** p < .01; * p < .05

Among those who created videos, gender differences in the complexity of software used for video editing were marginally statistically significant (p-value of 0.07 for a Pearson's Chi-Square test). Table 18 suggests that, among students who create videos, a higher share of men than women use highly complex video editing software (28% versus 16%).

Table 18

Distribution of Men and Women Who Created Videos by Editing Software Complexity

Video Editing Software Complexity Level	Total (Percent)	Males (Percent)	Females (Percent)
Low	31.3	31.5	31.3
Medium	47.3	40.1	52.7
High	21.4	27.9	16.1

Note: *** $p < .001$; ** $p < .01$; * $p < .05$

Students who created videos identified the importance of five reasons in their decision to make videos. Table 19 shows that men reported higher motivation than women to create videos because of a desire to improve video creation skills and to achieve fame and online reputation. Men and women report similar levels of motivation for having fun on a computer, influencing others and advocacy, and friends and classmates.

Table 19

Reasons Important in Decision to Create Videos Among Students who Create Videos

Mean Response Value (std. dev)	Men	Women	Gender Gap
Friends and classmates	3.47 (1.22)	3.54 (1.15)	-0.07
Fame, online reputation	1.80 (1.01)	1.49 (0.77)	0.32**
Having Fun on a Computer	3.00 (1.19)	3.08 (1.14)	-0.03
Influencing others, advocacy	2.20 (1.14)	1.97 (1.09)	0.23
Desire to improve video creation skills	2.51 (1.19)	2.15 (1.14)	0.36**

Notes: Items are measured on a five-point Likert scale.
*** $p < .001$; ** $p < .01$; * $p < .05$.

Logistic Regression Models on Online Video Creation

This section presents the results of logistic regression analysis of the predictors of creating at least one online video. Without taking any other variables into account, Table 20 shows that women are less likely to create online videos than men (odds-ratio = 0.67).

Subsequent models address the second research question and bring in other measures from the conceptual framework. Model 2 adds the demographic block of variables with controls for ethnicity, immigrant status, socioeconomic status and high school size. Model 2 in Table 20 shows that women are less likely to create online videos than men (odds-ratio = 0.65) even after controlling for these demographic variables. International students are less likely to create videos (odds-ratio = 0.39) and second-generation immigrant students are more likely to create videos (odds-ratio =1.90) than non-immigrant students, net of the other variables in the model. High school size, low socioeconomic status and ethnicity are not related to the likelihood of video creation.

Model 3 adds the four factors for Attitudes Toward Computers. After controlling for attitudes toward computers, gender is no longer a significant predictor of video creations. Both higher levels of computer confidence (odds-ratio = 1.25) and more positive attitudes toward computers are associated with greater likelihood of creating videos (odds-ratio = 1.23) after controlling for other variables. Compared with non-immigrant students, second-generation immigrant students continue to be more likely (odds-ratio = 1.87) and international students continue to be less likely (odds-ratio = 0.43) to create videos than non-immigrant students, net of the other variables in the model.

Model 4 adds the four TAM factors and variables for family encouragement and computer platform experience. Gender continues to be unrelated to the likelihood of video creation. Adding the TAM variables eliminates the relationships between the two Attitudes Toward Computers factors of computer confidence and positive attitudes toward computers and the likelihood of video creation. Of the four TAM factors, only one is significant. The likelihood of creating videos increases with ratings on the Video Creation Ease factor (odds-ratio=1.32), net of other variables. Students reporting experience using the Macintosh (Apple) computer platform are more likely (odds-ratio = 1.96) to make videos than students without such experience. Second-generation immigrant students continue to be more likely (odds-ratio = 1.81) and international students are less likely (odds-ratio = 0.36) to create online videos than non-immigrant students.

Goodness of fit improves from Model 1 to Model 4. The percent of cases correctly classified increases from 54% for Model 1, to 61% for Model 2, to 62% for Model 3, to 66% for Model 4. Pseudo-R2 increases steadily as well but remains relatively low, ranging from 0.007 to 0.098.

Table 20

Logistic Regression Results for Online Video Creation

Independent Variable (Odds Ratios reported)	Model 1 Gender only	Model 2 Demographic	Model 3 Attitudes	Model 4 TAM
Demographics Variables				
Female	0.671*	0.648*	0.812	0.817
Male (Ref. Category)				
African American non Hispanic		1.083	0.919	0.831
Asian non Hispanic		1.044	0.997	1.313
Hispanic		0.585	0.514	0.521
Other/Race Unknown non Hispanic		1.611	1.764	2.037
White non Hispanic (Ref. Category)				
International Student		0.387*	0.426*	0.361*
First Generation		1.229	1.090	1.002
Second Generation		1.896*	1.871*	1.811*
Not an Immigrant (Ref. Category)				
Low Socioeconomic Status		0.937	0.930	0.897
Small High School		0.635	0.648	0.684
Large High School		1.155	1.129	1.293
Very Large High School		0.997	1.012	1.116
Medium Size High School (Ref. Category)				
Attitudes Toward Computers Variables				
Computer Confidence Factor			1.250*	1.046
Tool Use Factor			1.074	1.101
Positive Attitudes Factor			1.226*	1.168
Negative Attitudes Factor			0.886	0.905
TAM Variables				
Ease of Video Creation Factor				1.320**

Independent Variable (Odds Ratios reported)	Model 1 Gender only	Model 2 Demographic	Model 3 Attitudes	Model 4 TAM
Value of Video Creation Factor				1.063
Self-perception of Ability Factor				1.218
Comfort with Social Risk Factor				1.188
Computer platform experience				
PC (IBM)				0.723
Macintosh (Apple)				1.964**
Linux and other operating systems				1.036
Family encourages multimedia careers				0.849
Number of cases in the analyses (N)	633	592	566	557
Model χ^2, df	6.1, 1*	40.2,12***	47.0,16***	75.5,24***
Pseudo-R2	0.007	0.049	0.060	0.098
Hosmer-Lemeshow χ^2, df	NA	3.3,8	14.7,8	5.3,8
Percent of cases correctly classified	54.3	61.3	61.8	65.5

Note: *** p < .001; ** p < .01; * p < .05.

Interaction between Gender and Computer Confidence

The third research question explores the interaction between gender and computer confidence. This analysis was completed by adding an interaction variable between gender and computer confidence in the final block of the logistic regression analysis. This interaction variable was not significant, answering the third research question.

Logistic Regression Models on Roles Played in Video Creation

Logistic regression analysis is also conducted to examine gender differences in each of the nine video creation roles. The reference category for this set of regression models includes students who have made no videos and students who have made videos but have not played that particular role in video creation; as a result care is needed in interpreting regression results.

The explanatory power of the regression analyses varies across the dependent variables. The model has sufficient statistical significance (overall p-value of < 0.05) for eight of the nine roles. The model is not successful at capturing behavior for the role of creation of animation and machinima, a role reported by just 3.6% of the students. As shown in Table 21, for the other eight roles, the model correctly classifies between 67.6% and 84.1% of the cases correctly. The pseudo-R2 levels range from 0.080 to 0.152.

The regression analyses show gender differences in four of the nine roles. Table 21 shows that women are less likely than men to perform in a video (odds-ratio of 0.64), use a handheld camera (odds-ratio of 0.63), add music, images and titles (odds-ratio of 0.63) and fix audio or video quality (odds-ratio of 0.55), net of other variables.

Students with more positive attitudes toward computers are more likely to engage in five of the nine roles measured, net of other variables. Positive attitudes toward computers are associated with greater likelihood of making slideshows (odds-ratio of 1.77), adding music, images and titles (odds-ratio of 1.52), fixing audio and video quality (odds-ratio of 1.66), editing video clips (odds-ratio of 1.74) and engaging in video production (odds-ratio of 1.46).

Table 21 also shows that students with higher levels on the TAM factor are more likely to engage in four of the nine roles measured, net of other variables: making slideshows (odds-ratio of 1.41), adding music, images and titles (odds-ratio of 1.62), editing video clips (odds-ratio of 1.62) and engaging in video production (odds-ratio of 1.47). Students reporting experience on a Mac platform are also more likely to engage in seven of the nine roles measured, net of other variables. Students with experience on the Mac platform are more likely that students without this experience to perform in videos (odds-ratio of 2.03), make slideshows (odds-ratio of 2.52), use cell phones and webcams (odds-ratio of 3.03), use handheld cameras (odds-ratio of 1.63), add music, images and titles (odds-ratio of 2.17), fix audio and video quality (odds-ratio of 1.31) and edit video clips (odds-ratio of 2.45).

Table 21

Logistic Regression Predicting Roles Played in Video Creation

Independent Variable (Odds Ratios reported)	Perform in video	Slideshow	Cell phone / Webcam	Handheld Camera	Music / Images / Titles	Fix Audio / Video	Clip Editing	Video Production
Percent of students playing role	41.0	25.0	23.3	30.2	30.6	16.0	22.0	17.1
Demographic Variables								
Female	0.69	0.90	0.88	0.70	0.69	0.59	0.68	0.77
Male (Ref. Category)								
African American	0.83	0.70	0.87	1.38	1.05	1.39	1.09	1.36
Asian	1.33	1.14	1.12	0.98	1.07	1.16	1.25	1.05
Hispanic	0.52	0.64	0.52	0.49	0.71	0.80	0.84	0.52
Other/Race Unknown	1.27	2.57	0.75	1.11	1.36	2.88	1.57	3.14
White (Ref. Category)								
International Student	0.38*	0.68	0.94	0.32*	0.56	0.55	0.26	0.43
First Generation	1.18	1.46	0.99	1.42	1.61	2.09	1.04	1.24
Second Generation	2.08*	1.59	1.82	1.79*	1.80	1.97	1.26	1.65
Not Immigrant (Ref. Category)								
Low Socioeconomic Status	1.07	1.52	0.95	1.05	1.41	1.36	1.12	1.14
Small High School	1.04	0.96	0.65	0.80	0.87	1.22	1.11	1.87
Large High School	1.65*	1.62	0.93	1.30	1.44	1.45	1.62	1.95*
Very Large High School	1.03	1.20	1.05	0.88	1.15	1.00	1.08	1.16
Medium Size (Ref. Category)								
Computer Confidence	1.12	1.38	1.04	1.17	1.33	1.57*	1.45*	1.57*
Tool Use	1.07	1.16	1.07	0.94	1.04	0.86	0.88	0.83
Positive Attitudes	1.06	1.19	1.05	1.26*	1.16	1.33*	1.24	1.31*
Negative Attitudes	0.98	1.08	1.00	0.96	0.99	1.09	1.16	0.95
TAM Variables								
Ease of Video Creation	1.22	1.24	1.17	1.14	1.45**	1.30	1.52**	1.25
Value of Video Creation	1.18	1.18	1.17	1.11	1.12	1.07	1.07	1.35*
Self-perception of Ability	1.04	1.28*	1.25	1.14	1.30*	1.13	1.29	1.31
Comfort with Social Risk	1.28*	0.98	1.10*	1.07	1.04	0.90	1.06	1.16

Independent Variable (Odds Ratios reported)	Perform in video	Slideshow	Cell phone / Webcam	Handheld Camera	Music / Images / Titles	Fix Audio / Video	Clip Editing	Video Production
Computer platform								
PC (IBM)	0.82	0.99	1.10	1.19	0.98	0.93	0.64	0.76
Macintosh (Apple)	2.03**	2.39**	3.04***	1.50	2.02**	2.05*	2.25**	1.94*
Linux and other operating systems	1.02	0.67	0.75	0.74	0.53	0.57	0.42	0.42
Family encourages multimedia careers	0.86	0.88	0.85	1.08	1.07	1.55	1.40	1.05
Number of cases (N)	555	555	555	555	555	555	555	555
Model χ^2, df	78.3,24 ***	76.9,24 ***	49.1,24 **	56.3,24 ***	88.6,24 ***	70.5,24 ***	91.2,24 ***	58.5,24 ***
Pseudo-R^2	0.104	0.125	0.080	0.083	0.131	0.142	0.152	0.130
Hosmer-Lemeshow χ^2, df	6.8,8	15.2,8	5.5,8	15.3,8	11.4,8	7.6,8	15.0,8	7.4,8
Percent of cases correctly classified	67.6	78.0	77.3	71.4	74.2	84.1	77.3	83.1

Note: *** $p < .001$; ** $p < .01$; * $p < .05$.

a: This model does not achieve sufficient validity and has a model probability > χ^2 of 0.26. All the other models reach adequate levels for model probability.

Multinomial Logistic Models for Number of Videos Created

Analysis of the number of videos created is limited to students who have made at least one video. The dependent variable on number of videos has four categories: up to two videos, three to five videos, six to ten videos and more than ten videos. Multinomial logistic regression was conducted using the blocked entry strategy described earlier. Pseudo-R^2 values remain low, but increase steadily from 0.007 for Model 1, 0.072 for Model 2, 0.111 for Model 3 to 0.163 for Model 4.

Table 22 (Model 1) shows that gender is unrelated to the number of videos created. Model 2 shows that, after adding demographic characteristics, women were less likely (odds-ratio = 0.37) than men to make more than ten videos than up to two videos. Asian students were less likely (odds-ratio = 0.26) than Whites to make 3 to 5 videos rather than 1 to 2 videos.

Model 3 shows that after taking into account attitudes toward computers, gender, ethnicity and immigrant status were no longer related to the number of videos made. Higher ratings on Computer Confidence increased the likelihood of students making more than ten videos (odds-ratio of 2.24) compared to 1 to 2 videos. Higher ratings on Tool Use increased the likelihood of students making more than ten videos (odds-ratio of 1.97) or six to ten videos (odds ratio of 1.07) compared to 1 to 2 videos.

Model 4 shows that, after controlling for the TAM variables, gender, ethnicity and immigrant status continued to be unrelated to the number of videos made. Computer Confidence continued to be positively related to the likelihood of making more than ten videos (odds-ratio of 3.24) compared to 1 to 2 videos. Higher ratings on Tool Use were associated with increased likelihood of making 3 to 5 videos (odds-ratio of 1.55) compared to 1 to 2 videos. Only one of the TAM variables was significant in affecting likelihood of the number of videos made. Higher ratings on the Value of Video Creation increased the likelihood of making 8 to 10 videos (odds-ratio = 1.64) compared to 1-2 videos.

Table 22

Multinomial Logistic Regression Predicting Number of Videos Created

	Model 1			Model 2			Model 3			Model 4		
Independent Variable (Odds Ratios reported)	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
Demographics Variables												
Female	0.66	0.59	0.44	0.65	0.54	0.37*	0.57	0.50	0.53	0.50	0.45	0.68
Male (Ref. Category)												
African American				0.61	0.75	0.50	0.69	0.87	0.54	0.82	1.12	0.87
Asian				0.62	0.26*	0.25	0.75	0.39	0.35	0.70	0.55	0.42
Hispanic				1.35	2.04	0.32	1.21	1.84	0.30	0.99	1.85	0.22
Other/Race Unknown				0.27	0.65	0.39	0.24	0.28	0.42	0.30	0.23	0.20
White (Ref. Category)												
International Student				0.90	0.00	0.97	0.91	0.00	0.98	0.91	0.00	1.23
First Generation				1.40	1.20	0.00	1.01	0.91	0.00	1.00	0.74	0.00
Second Generation				1.24	0.69	1.38	1.14	0.51	1.03	1.20	0.46	0.80
Not an Immigrant (Ref. Category)												
Low Socioeconomic Status				1.57	2.29	1.94	1.24	2.32	1.53	1.17	2.12	1.92
Small High School				0.97	0.89	0.00	0.75	0.73	0.00	0.77	0.90	0.00
Large High School				1.12	1.92	0.68	0.82	1.46	0.69	0.84	1.53	0.59
Very Large High School				1.09	2.12	0.42	1.17	2.12	0.49	1.18	2.42	0.40
Medium Size High School (Ref. Category)												
Attitudes Toward Computers Variables												
Computer Confidence							1.06	1.34	2.24*	1.45	1.45	3.24*
Tool Use							1.56	1.07*	1.97*	1.55*	0.97	1.33
Positive Attitudes							0.95	0.98	0.76	0.94	1.02	0.60
Negative Attitudes							1.15	1.11	0.79	1.02	1.11	0.77
TAM Variables												

	Model 1			Model 2			Model 3			Model 4		
Independent Variable (Odds Ratios reported)	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
Ease of Video Creation										0.70	1.12	1.36
Value of Video Creation										1.11	1.64*	1.70
Self-perception of Ability										0.90	1.29	1.61
Comfort with Social Risk										0.98	1.37	1.05
Computer platform experience												
PC (IBM)										0.90	0.56	NA
Macintosh (Apple)										1.01	1.40	1.63
Linux /other										0.63	0.29	0.26
Family encourages multimedia careers										1.33	0.54	1.00
N		326			301			281			276	
Model χ^2, df		5.1,3			52.8,36			75.7,48			109.0,72	
Pseudo-R^2		0.007			0.072			0.111			0.163	
Regression Overall p-value		0.16			0.035*			0.0065**			0.003**	

Note: *** p < .001; ** p < .01; * p < .05. Reference Category is up to 2 videos. Low category is 3 to 5 videos. Med category is 6 to 10 videos. High category is more than 10 videos.

Gender Differences in Predictors of Creating Online Videos

Descriptive analyses were conducted on key variables to further explore gender differences in predictors of creating online videos. Unpaired t-tests were used to evaluate gender difference in the means for the factor variables, and Pearson's Chi-Squared tests were used to evaluate differences between women and men for yes-no variables. Table 23 shows gender differences for all four factors measuring Attitudes Toward Computers. Compared to women, men report higher computer confidence (64% of a standard deviation), higher levels on tool use (40% of a standard deviation), higher positive attitudes (45% of a standard deviation) and lower negative attitudes (26% of a standard deviation).

Table 23 shows gender differences for three of the four factors for TAM. Compared to women, men report higher perceptions of the ease of video creation (44% of a standard deviation), higher ratings on self-perception of ability to create videos (42% of a standard deviation), and higher comfort with social risk involved in video creation (40% of a standard deviation). Men and women have almost identical perceptions of the value of video creation and similar rates of reporting experience with the Mac platform. One item-specific finding relevant to the theoretical frameworks of learned helplessness and stereotype threat is that, compared to women, men reported a much higher level of agreement with the statement: I have a natural ability or talent for working with computers.

Table 23

Observed Differences between Men and Women for Key Variables

Independent Variable	Men	Women	Gender Gap (M-F)
Attitudes Toward Computers Variables			
Computer Confidence Factor	0.37	-0.26	0.64***
Tool Use Factor	0.23	-0.16	0.40***
Positive Attitudes Factor	0.27	-0.19	0.45***
Negative Attitudes Factor	0.15	-0.11	0.26**
TAM Variables			
Ease of Video Creation Factor	0.26	-0.18	0.44***
Value of Video Creation Factor	-0.02	0.02	-0.03
Self-perception of Ability Factor	0.25	-0.17	0.42***
Comfort with Social Risk Factor	0.22	-0.18	0.40***
Computer platform experience			
Macintosh (Apple)	0.62	0.69	-0.07
Learned Helplessness / Stereotype Threat item:			
I have natural ability / talent to work with computers.	3.47	2.99	0.48***

Note: *** p < .001; ** p < .01; * p < .05. All factors are standardized variables. The Macintosh experience is a yes-no variable. The learned helplessness / stereotype threat item is a five-category Likert scale.

Qualitative inquiry on gender differences

The qualitative inquiry provided insights to complement results from quantitative analysis. The focus group discussions and interviews were analyzed with attention to gender, ethnicity (perceived, not reported), school affiliation and level of experience with online video creation. As described in the Research Design chapter, recruitment was conducted using general outreach strategies in public gathering places with care was taken not to avoid bias in terms of online video creation experience. The 19 participants described a range of experience with online video creation; six had made no videos and one had made over 30 videos. Table 24 summarizes the characteristics of the 19 participating students across the four schools at this university.

Table 24

Qualitative Data Collection Summary

Meeting	Context	Gender (Number)	School Affiliation	Pseudonyms
Focus Group 1	Writing Seminar	Females (6)	Business (4) and Liberal Arts (2)	Jean, Nancy, Susan, Gloria, Evelyn and Brittany
Focus Group 2	Writing Seminar	Males (2)	Engineering (1) and Liberal Arts (1)	Asif and Yuri
Focus Group 3	Dormitory	Female (1), Male (1)	Liberal Arts (2)	Alice and Ben
Focus Group 4	Nursing Classroom	Female (6)	Nursing (6)	Allie, Jane, Sofia, Jennifer, Mary and Maria
Individual Interviews	By Appointment or at Dormitory	Males (3)	Business (1) and Liberal Arts (2)	John, Charles and Daniel

Participant descriptions

In Focus Group 1, Jean, Nancy, Susan and Evelyn are in the business school and Gloria and Brittany are in the liberal arts school. Jean is an expert at online video creation, Evelyn and Brittany have no video creation experience and the other three students have some prior experience. While participants did not explicitly identify by race or ethnicity, Jean, Nancy, Gloria and Brittany are of Asian origin and Susan and Evelyn appeared to be white. In Focus Group 2, Asif and Yuri are international students from Eastern Europe and both are experts at video creation with substantial video experience. Asif is in the engineering school and Yuri is in the liberal arts school. In Focus Group 3, Alice and Ben are two white students from the liberal arts school living in the same freshman dormitory. Neither has substantial experience with or interest in online video creation.

In Focus Group 4, Allie, Jane and Sofia have no video experience and Jennifer, Mary and Maria are at the beginner level with video. Allie and Sofia are Asian, Maria is Hispanic, Jane is African American and Jennifer and Mary appear to be white. Of this group, Jennifer has the most experience. She has made several videos but has not explored editing. Jane is not particularly impressed by the videos created by students her age and is concerned about privacy issues. Sofia has no experience making online videos though she has acted in one video. John is a business student and Daniel and Charlie are liberal arts students.

All of the focus groups were single-gender with the exception of one group meeting that included one male and one female student. The three one-on-one interviews were necessitated by scheduling difficulties and all held with white male freshmen at the expert level who have each made several online videos.

Overview of Responses

Participants described a wide variety of contexts for video creation. The women mentioned cheerleading, dance, Model United Nations, field hockey, French class projects, talk shows and private performance of vocal and piano music. The men mentioned soccer, philosophy class projects, informal interviews, birthday greetings and private performance of vocal, drum and guitar music. Both men and women mentioned videos about politics and funny situations.

All six students who reported no experience with online video creation were female. Five of the six students who described beginner level experiences (such as holding a camera or making a webcam video but no editing experience) were female. Two students, one male and one female, reported intermediate level experience, and described making several videos and minor editing. Five students, four male and one female, reported advanced level experience, mentioning the high complexity software titles as categorized in Chapter 3 and discussing complex editing tasks. Only one of the 13 women mentioned personal experience with video editing. In contrast, five of the six men described editing in great detail. Three men also described conscious decisions not to edit videos because of the time commitment involved, as opposed to nervousness or lack of knowledge about editing.

Gender Differences in Video Creation and Editing

Eight of the women explicitly described both lack of experience and lack of interest in video creation. Allie's comment is representative, "I personally don't have any experience making or anything but I do watch YouTube videos." Several women participants revealed an inherent lack of interest in video editing. Focus Group 4 with six female nursing students included an active discussion of gender differences in video editing. Five of the six students agreed that video editing is primarily of interest to men and one disagreed. All the students had little or no experience with video creation. Maria described:

> I've never really met a girl that was very good at all those things. Most of these people I know who are good at these type of technological effects are males. I'm not saying that just males do it, but that's my experience.

Mary concurs, adding, "Agreed. I mean I know girls who can do it and are interested in it but definitely when I think of like filmmaking or online video making, that involved editing not just uploading, I think of men." Sofia agrees, "My friends who are into video and video editing are mostly males. And they have an actual passion for it which I don't see in my girlfriends like the same interest in filming."

Jennifer disagreed with the group, gave the example of one of her friends and said, "I actually haven't really noticed a gender difference. I know that the girl from my club team, the one that made the video – it was so well done, so well edited and that was a girl." Female students did not describe experience with video editing in much detail. Mary's comment is representative, "It depends on your level of familiarity with editing, or even with a computer. I think that I just don't use special features on the computer enough to like really be good at it."

Men described video editing tasks as a hobby to be explored during leisure time. Charlie and Daniel, expert and intermediate video creators respectively, compared and contrasted video-editing software with other computer programs at length. They compared video editing software to productivity software such as Excel and PowerPoint and graphics software such as PhotoShop, and concluded that most video editing software is of medium-level difficulty. All of the men except for Ben, the only male at the beginner level, mentioned specific editing tasks and described the process of video editing they followed.

Gender Differences in Experiences with School Projects

Men and women gave different narratives for required school projects that included video creation. Some women used language to describe their experience with school video projects that hinted at learned helplessness and stereotype threat but data were insufficient to warrant strong conclusions.

Men described video projects as "exciting," "fun" and "creative." Women described playing minor, incidental roles in the process of creating video projects for school assignments. Charles was the participant with the greatest expertise in video editing. He spent considerable time describing school projects that had inspired his work. He described:

> [My videos are] more like my own interpretations of stories or concepts. In high school my friends and I we would look forward to any assignment that we could make a video out of. You know for our philosophy class we used that a lot to show some aspect that we were concentrating on in a more practical way or using more surrealist techniques in video making.

John, an expert at video creation commented about the potential for school-required video projects to change student behavior, saying, “If I had [an assignment] for school, then I’m sure I would spend time to learn to edit.”

The issue of whether some women might avoid video editing tasks in school projects came up in the first writing seminar focus group (Focus Group 1). Brittany, a beginner, mentioned that for several school-required video projects, she consciously handed over the task of video creation to another student, describing,

> Honestly I haven’t had any experience of video making because [when] … we need a video to be made there’s always someone in my group who can make it. So, I’m not really an expert in making videos … so I’m not going to do that.

Susan agreed with Brittany, saying, “Most of the videos that I made my friends took a larger role in actually making them than I did.” Sofia adds:

> I don’t make videos either. I just watch them on YouTube or Facebook. … I’ve had one class in high school … I wasn’t the main person in charge of the video. I just watched from the sidelines. ... I was the actor and someone else was the editor and taping the entire thing.

Maria in the nursing focus group (Focus Group 4) described a situation similar to Brittany where, for group projects during high school, she frequently let someone (gender not specified) who already knew the skills take on the editing rather than learning the skills herself:

> Like if you have a friend or someone who's very good at those things maybe it might be easier for them. I know, like in high school I had videos to do, and I never tried to learn. I was just like 'you can do it, you're good at this' and … some people just love doing effects and playing around the computer.

Gender Differences in Perceptions of Humor and Video Quality

Men and women both discussed humorous videos as a particular genre where gender plays a role. Jean spoke about how humorous videos were often the domain of her male classmates and her envy of the ease that she perceived men had in creating light-hearted videos. She explained, "Many girls are creative, but guys … in my age group just have that level of immaturity to able to see something funny or comedic in anything [and] make something of it." Alice agrees that men often consciously create humorous videos and John describes conscious creation with his male friends of "guitar videos and stupid things like that as jokes."

Sometimes a video that is humorous in one context can become awkward in another. Yuri describes with some embarrassment his experience, saying:

> There is a video on YouTube [that] was a very funny movie when we made it. … It's a joke about war crimes. [Today] it would be actually very insulting … But when we did it, it just was a joke, two guys having a laugh on camera.

John explained that videos that are both self-aware and humorous have a high social value for his age group, saying, "If a kid can make fun of himself then [many]

YouTube videos would be funny. … Some kids are really loud, obnoxious, and they make fun of themselves [and] **that** is funny." (emphasis in the original).

Three of the six men criticized videos that were not well edited. In contrast, none of the participating women stated expectations for video quality. Asif's comment, representative of several from the male participants, was:

> … many of the videos you view on Facebook and YouTube you can notice the quality is kind of poor … someone is taking a shot of something live, his hands are moving all the time … There's too much background noise and sometimes he is also speaking while taking it. … People can always edit the sound, the volume and modify stuff, add subtitles. So at least if someone wants to post something I'd rather he pays a little bit of attention to that stuff so if he wants to be creative he can deal with the sound, add different side tracks to his main video.

The descriptive analyses of questionnaire data in Table 19 documented gender differences in the reasons why students decided to create videos. These analyses reveal that men are more motivated by the number of views their videos receive, and that men place a higher value on the quality of video editing demonstrated by a particular online video. These results are echoed in the student comments just presented.

Gender Differences in Attitudes Toward Computers

Students revealed their attitudes toward computers through the details they provided and the adjectives they used to describe technology tasks. Some students used words like "love," "enjoy," "thrilled," and "addicted" to describe the video creation process while others used words like "frustrating," "slow," "hard," "difficult," and "challenging." Overall, the women students had significantly less video creation experience than the men students. Of the thirteen women participants, Jean is an expert and Gloria is an intermediate-level video creator. The others have little or no video experience. Jean was the only woman to use positive words to describe her technology experiences. Sofia, a beginner with video creation, connected video editing to general computer confidence, saying, "[Today] it's much easier to make a video …You have all these kinds of computer programs to help … I think it depends on … how savvy [one is] with the computer."

The male students used both positive and negative words to describe technology tasks, and male students with substantial video creation experience had more frequent use of positive words than male students with little experience.

Gender Differences in Perceived Ease of Use

Gender differences emerged in the perception of ease of specific video editing tasks and of video creation in general. Participants reflected on the difficulties and time constraints involved with video editing. Beginners agreed that editing video is substantially more time consuming and complex than simply filming and uploading video. Mary, a beginner at video creation, contrasted simple recordings and edited videos, saying, "If you want to edit it, it's harder than if you just want to upload it, that's pretty easy. I don't consider myself super technologically savvy [and I can upload video]." Jennifer, another beginner, pointed out many obstacles to video editing, and considered adding titles to be difficult. She stated, "If you just want like a basic video just use your camera or your phone that's really easy… adding in effects even if adding words on the screen … can be way more challenging." Jean, the one woman with expertise in video editing, discussed the role of time constraints in reducing her ability to edit and hypothesized that "guys have more leisure time than girls."

In contrast to Mary and Jennifer's comments, Asif and Yuri, two expert video creators describe video editing tasks as simple and easy to learn on their own. Asif describes, “Whereas ten years ago, only the professionals were used to do videos but today anyone can.” Yuri agrees, “If you know how to write a word document, you can probably edit a video … people don’t actually know what they are doing, they are just clicking things.” Asif continues, describing his experience learning to edit video, “To begin with I had no idea what are the skills I needed … it was so simple enough. It was user friendly … I managed to do everything on my own.” Daniel, an intermediate-level video creator described the ease of video creation, saying, “If you are just a new user, just making a video with a webcam and posting it on Facebook is very easy.” He continued, “You can add small effects and transitions, are still very easy, they are simple, they are straightforward.”

Students discussed the ease of use of specific cell phones and handheld cameras. They discussed the differences between uploading videos to Facebook versus YouTube (YouTube was considered easier by all who mentioned this topic). Two students explicitly discussed the advantages of the Mac operating system for video editing. Susan’s quote below is representative of their comments:

> Certain computers like Macs have certain software where … it’s very easy to combine bits of videos. And if you use that software and even if you don’t know what you are doing, it’s very easy to figure it out, to combine different shots and different frames and combining them into a larger video.

Gender Differences in Perceived Usefulness of Online Video Creation

The perceived usefulness of video creation came up repeatedly in several sessions. Both male and female students with video creation experience discussed explicitly the reasons why they created videos, seeing video creation as a means to an end, rather than a pastime in itself. Ben described video as “a pretty effective way to put a message on the Internet in one place, easily available to others. If you're looking to communicate, videos are pretty easy." Asif explained that video creation is just a way to share one's passion with friends, saying:

> I remember [when] I made my video … other students who had an interest in sports were making … basketball videos, soccer videos, … if you have something you are passionate and interested about [then you] are more likely to [make a video] than someone who doesn't have something he is passionate about.

John described how he used video to communicate with his brother who was attending college in another state, recording a birthday message with his friends and sharing it through Facebook. He noted the emotional power of the video-chats when his roommate connects with his family across the country. According to John, his roommate "video chats with [family] a few times a week. A lot of time, the mom, dad, uncle, aunt, little brother, grandpa, grandma, they will all be there … It brings you closer to home. … It feels like home."

Gender Differences in Social Influence

In addition to communication and sharing one's passions, students described making videos as a way to communicate with their social circle and with the world at large. Several of the expert video creators focused on sharing their musical talents with the world at large. John described with envy the singing, drumming and guitar talents his friends have shared through videos. He describes one talented drummer's video impact:

> He has a bunch of videos of him playing drums –it's just insane. So kids are like check him out – we are procrastinating in the library, Look at this kid, he's amazing … oh I heard about that kid he's really good at drums … kind of cool.

Students with expertise in video creation talked about social influences that motivated and inspired them to make more videos. Asif is very proud that one of his videos has over 5,000 views on YouTube and describes his success as a source of personal pride:

> It is like something you can always talk about. And it's something you can be proud of. Especially if, like you are not a professional … that was your first video and you managed to do something really nice and that got a lot of views.

Jean, whose YouTube channel has more than 5,000 subscribers, describes the social influence that her subscribers have had on her behavior:

> I've been making videos since sixth grade. I first started with Windows MovieMaker … [before] YouTube was really big and … two years ago one of my videos on YouTube got featured and I got a lot of people [watching]. … I would get messages on a daily basis for requests of songs to sing, songs to play on the piano, different topics they would like to hear me talk about on my videos, or even just comments like, 'Oh my gosh, I love your videos, keep making more.'

Three women commented that their social circle includes video creators but that this has not inspired them to consider video creation themselves. For example, Jane has no video creation experience, yet she comments, "I have friends that create videos all the time."

Tensions between Social Influence, Privacy and Online Identity

While the prolific video creators clearly enjoyed their online fame and social status, students with no or little video experience expressed nervousness about the social effects of creating videos that were 'not good enough.' Some student comments revealed nervousness about their self-efficacy with video creation, self-confidence in their musical talent, self-confidence in their physical appearance and confidence in their social standing. Alice explains that videos that do not clearly show the student's talent or humor can damage one's social reputation, saying, "If you just put up weird videos of yourself not doing much that would be weird. … Are you making cool videos, people actually want to watch them or are you just sitting in front of your computer, talking?"

John echoes this self-consciousness about how one's video might affect peers' opinions. He explains his careful calibration of privacy settings using Facebook's private message features to share his music performance videos with just a select few of his friends. He describes recording a musical video piece several dozen times before feeling ready to share it with a friend with more expertise, saying:

> I had to do it multiple times. I wanted to get something that was clear enough, or good enough for [him] to see … he has responded with the full version of the song, almost one-upping me. It's nice to see how he was able to do that. He can play the whole song so he wouldn't actually [have to] perfect it. Like I would actually play maybe a 15 second clip that took me a while to perfect it but I could tell he just recorded once and sent it.

John then continued to talk at length about his discomfort with how his face and voice appear on a video, saying:

> I never like the way [my voice] sounds. I sound maybe a little young, immature, different than what I'd picture my voice to be. Same as my picture, no one likes their own picture even though everyone else thinks you look fine. Same with their own video people say, no that's just you, you sound the same as you normally do. So I would say, I don't like the way I look and sound.

Other students discussed their negative perceptions of peers who post videos that they believed were not socially acceptable. Ben spoke with scorn about students who post many online videos, saying, "They don't want privacy. They are someone trying to obviously garner attention by putting themselves out there." Allie also criticized overly revealing personal videos, saying, "Sometimes I feel like I know too much based on their videos ... Sometimes it gets too personal. ... I don't think that's necessary for others to see you in your pajamas recording."

Ben and Alice agreed that the main reason that stopped their peers from posting videos is fear that others will laugh at them for what they have posted online. Ben warns, “The Internet is very critical place. Because people are anonymous usually so I’ve seen a lot of people just get laughed at for what they are trying to do on there.”

Jane was the only student who felt strongly that online videos did not affect social status, saying, “I don’t think it changes your social status at all. Whoever, if they know you they know you. If they watch a video of you, they watch a video then. I don’t think it really matters to them.” The topic of whether making videos affects social status engaged one of the focus groups for some time, leading to Allie's summary, “I think it does make you … not necessarily more popular, but more noticeable.” The group nodded assent and Maria added, “As you said it does make people noticeable and I tend to recognize them once I have seen them [on video].”

Differentiating Social Influence on YouTube and Facebook

Students talked in some detail about the privacy and social networking differences between Facebook and YouTube, a distinction that was not addressed by the questionnaire. Some students found Facebook to be a safer, more private space, while other students found the anonymity of YouTube to be more reassuring as a safe space for risk-taking.

Several students mentioned that sharing a video on YouTube is more anonymous, and less personally risky than sharing the same video on Facebook. Allie's comment is representative of this group, “On YouTube I don’t think anyone notices it unless they are searching … on Facebook on your newsfeed you see it, you do watch it … you are more aware of that person.” Sofia agrees with Allie about Facebook, adding, “I think it has an impact on your social status. If you are a friend and … if they make a video and they include you then that changes the relationship.” Some students mentioned that the volume of material on YouTube provides a sense of security that may be false but is seductive. Yuri explains, “There is extreme overload of information and we cannot find what we actually want to search. … I consider YouTube to be actually private … you are just sure that nobody is going to find you.”

Asif disagrees, “Since YouTube is something you have no control over the users so I’d rather stick to something … that wouldn’t invade your own privacy.” Jennifer clarifies about Facebook:

> If you see that a video has been posted you might go click on it and watch it. And while you are there, you might look around … It can lead maybe not necessarily making that individual person more popular but it can increase the amount … you know about that person and [make you] … start looking further.

Mary differentiated clearly between the two sites, saying, “Facebook is usually pretty controlled it. … YouTube is way less controlled. [Facebook] is not necessarily safer, but in my mind definitely I consider it safer.”

For both sites, students showed substantial concern about their online reputation. John described a personal experience with a video of inappropriate behavior found on YouTube by his grandfather creating much embarrassment, “I have no idea how he found my sister’s friend’s account. … [It was] a reminder that nothing on the Internet is private.” Maria shares such concerns, saying, “[if] you’re not doing anything wrong then it is easier for you to post more videos because there isn’t anything that people could say anything negative … knowing that their parents and family members can see.”

Tensions between Time Use and Perceived Usefulness

The premium on leisure time and the perceived usefulness of creating videos were sometimes in tension. Students described hours of painstaking video editing, sharing drafts with friends to get feedback and suggestions and then making conscious decisions to stop editing due to time constraints. The concept of leisure time, or lack thereof, came up repeatedly in the qualitative inquiry, and may be especially relevant in the context of a highly selective research university. For example, Jean mentioned that in order to be a competitive college applicant, she chose not to spend time editing videos. A similar study in a context with lower academic expectations for students may yield a different set of results.

Descriptions of Students Who Create Complex Videos

The qualitative inquiry provided a rich description of students who enjoy creating online videos. The quotes below capture the process by which a student begins video creation activities. Jean, the only female participant with substantial video creation experience, describes:

> It started out as [videos for] family and then … I just started putting [videos] up so I could watch myself… I wondered, 'The chance that people would find me on YouTube are slim to none, might as well, let's just try it out.' Then once I got subscribers, it became addicting and then I felt like you know I needed to keep giving my subscribers something to watch and keep getting feedback. It's just kind of like a self-fulfilling thing. … I'd have my camera on me at any time that anything cool was happening and I would whip it out and take video and put it in my clip loader.

Asif describes a similar immersion in video creation during his leisure time, saying:

> I had some free time and thought it would be a nice idea to make a video to do my own videos especially like seeing how on YouTube many people were posting their videos and they were getting seen. Although they were not professional videos, they were getting a lot of views. So I wanted to do my own and see how

> many views I can get. … I was free all day and didn't have any commitments or schoolwork so I thought I have the time I might as well learn something new.

Of all the focus group participants, Charles has the highest level of experience with video editing having created over 30 videos and explored video editing software in depth. He describes the process of both social and individual commitment:

> …My friends and I, we more like did small little bits and then through a lot of editing, we put them all together. I remember I made one video where it was all still photographs that I all arranged together, it was around 900 photographs that I arranged into a video to be played consecutively, so for my part it was mostly lots of editing, lots of, heavy use of Adobe Premiere.

John describes a similar process of aligning a series of video clips with audio tracks and then explains the shortcut he and his cousin took with one guitar video, "We kind of cheated and the music didn't always line up with what he was playing. But it was a stupid video so we didn't really care."

These students spoke with excitement and joy about video editing. Charles describes:

> The way that our video wanted to flow. For us the video what because we were doing a video, presentation was key. It's central to the concept. … Usually we did a lot of editing either to get a lot of attention from the audience. …. So then it wouldn't get dull and become just two people talking. Simply because we usually wanted to push things. So one video we wanted to keep surrealist involved lots of editing …We would take one, one scene and play it transparently over another scene to [make layers of video].

Descriptions of Students who do not create videos

In contrast to the high achievers in video creation, students who had not created any videos mentioned lack of time and lack of interest as two main reasons. Ben is a beginner at video editing and explains, "There's very user-friendly rudimentary tools available that I had used, but it's not like particularly fascinating to me." Later he describes video creation as an easy, but useless activity. Alice agrees that making videos is not difficult since she learned the skills in an extensive technology course but she's "not interested in making [her] own movies." Allie expresses scorn that students who make videos have too much leisure time and not as serious about academic pursuits, saying, "The [videos] I usually see are the boredom ones. Too much time on their hands. They are complaining on video that they have all this work to do. I don't get that."

Summary of Qualitative Inquiry

The qualitative inquiry provided insights into gender differences in video editing. Some of the student comments echoed the quantitative findings. The group of participants, recruited through a general outreach process, included 19 students, of which 11 of the 13 women had little or no video creation experience and 5 of the 6 men had intermediate or advanced video creation experience. Men and women reported different levels of interest in video creation and different experiences with school video projects. Humorous videos emerged as a new theme in the qualitative inquiry that was not considered in the quantitative analysis. The role of leisure time in video editing was another theme that recurred in the qualitative inquiry and was only peripherally addressed in the quantitative analysis. Students differentiated between Facebook and YouTube as platforms for sharing videos, a distinction that was not made in the quantitative data collection.

CHAPTER 5: Discussion and Implications

This study began with the observation that computer use is gendered in complex ways (Colley, 2003) with women on par with men in their participation in activities such as social networking (Ellison et al., 2006), but not as engaged with activities such as computer programming and video game creation (Pinkard, 2005). The new, and rapidly changing, activity of online video creation has not been studied much in the literature. Online video creation presents an interesting hybrid situation since the purpose of creating and posting an online video has much in common with social networking (Molyneaux, O'Donnell, Gibson, & Singer, 2008), while the process of creating some types of videos that include multiple clips and editing can resemble the immersion, time commitment and solitary nature of computer programming or video game design (Johnson & Johnson, 2004). Further, the ability to create effective video content is increasingly recognized as a core media literacy skill (National Governors Association, 2010), and one that is expected and used in a variety of careers including some jobs that have high average salaries and strong demand in the current job market (Crandall & Sidak, 2006).

Since little published research exists in the field of online video creation, the literature review draws on research exploring technology adoption, workplace computer use, computer programming, social networking, video game design, gender roles and self-efficacy. The conceptual framework for the study builds on theoretical models about technology acceptance (Davis, 1989; Venkatesh, et al., 2003; Yang, Hsu, & Tan, 2009), self-efficacy theory (Bandura, 1997), stereotype threat (Steele & Aronson, 1995) and learned helplessness (Abramson, Seligman, & Teasdale, 1978). The three research questions explore whether gender differences exist and further whether the conceptual framework helps to explain such differences. With no national datasets in existence on online video creation, this single-institution study addresses the open question about whether the activity of online video creation exhibits gender differences.

This study collects data through a questionnaire in online and paper formats and includes a small qualitative inquiry component. In the quantitative component, student creation of online videos is measured using an array of questions that gauge quantity (number of videos created), quality (level of editing, roles played in video creation, type of video editing software used, etc.), purpose of creation (required school projects, social and personal goals), and the social context surrounding the creation. Results are determined through descriptive analysis, logistic regression and multinomial logistic regression analyses. Qualitative analysis of data collected through focus groups and interviews provide additional insight into these relationships. This chapter summarizes the findings, identifies conclusions, and discusses implications for practice and research.

Findings and Conclusions

The first research question explored gender differences in online video creation. This dataset revealed substantial and complex gender differences. Descriptive analyses revealed that a higher percentage of men (58%) than women (49%) reported making online videos. Hargittai and Walejko find similar conclusions but lower percentages (26.6% for men and 16.9% for women) for data collected in 2007 from urban college students (2008); the difference likely reveals the rapid growth in online video creation between 2007 and 2010.

Descriptive analyses of online video creation by race / ethnicity category showed a large gender gap between Asian men and women and no gender gaps for the other race / ethnicity categories. The percentage of Asian men who had created videos (71%) was the highest of all the subgroups by race / ethnicity and gender. Pryor and Hurtado (2008) report similar statistics, although without discussion of within-group gender differentials, with Asian Americans reporting the highest levels of blog writing, blog reading and broadband Internet access at home. Gender differences in video creation were not significant for students in the African American non Hispanic category but the direction of the difference found, with a greater share of women creating videos than men, is consistent with the results of Zarrett et al (2006) and Kvasny (2006). Descriptive analyses also showed a large gender gap between men and women second-generation immigrants but no gender gaps for the other categories of immigrant status.

A higher percentage of men (55%) than women (41%) reported making videos for required school projects. Rosser (1998) reported similar gender imbalances in school group projects for technology and STEM activities. Wolf (2011) analyzed participation in the Google Online Marketing Challenge and concludes that, for tasks that require sustained effort and integration of Internet research, students with low confidence in their own computer skills have higher preference for group-based projects than students with high confidence.

Men reported higher levels of engagement than women in five of the nine roles: performing in online videos; adding music, images and titles to videos; improving audio or video quality; editing with multiple clips; and planning, producing or directing videos. The findings on the last three roles related to video-editing tasks are consistent with findings from Valentine and Bernhisel (2008) of larger gender gaps in video-editing activities compared to simple video creation activities. No gender differences emerged in the other four roles studied: the creation of slideshow videos; the creation of machinima and animation videos; the use of cell phones or webcams; and the use of handheld video cameras. Among students who created at least one video, no gender differences emerged in the number of videos made or the complexity of video -editing software used.

Men reported higher levels of self-rating of expertise in video creation compared to women. This measure combines perception of self-efficacy as well as actual experience with video creation tasks. Similarly, studies by Hage (2006) and Ketelhut (2006) documented that women show lower levels of confidence than men regarding technology use in relation to their actual level of mastery. Since this study does not measure or evaluate actual expertise in video creation, differences in the relationship of self-rating of expertise to actual expertise by gender cannot be directly evaluated.

For the students who had made videos, descriptive analysis revealed gender differences in the reasons behind the decision to create videos. Men were more motivated than women by the perceived usefulness of improving their video creation skills and by the social influence of fame and online reputation. No gender differences emerged in terms of having fun on a computer, influencing others or advocating for a cause, or influencing friends and classmates.

The second research question explored whether including measures from the theoretical frameworks of stereotype threat, learned helplessness and TAM would explain observed gender differences in online video creation. In this dissertation, including measures of attitudes toward computers and TAM largely eliminated relationships between gender and online video creation outcomes. Therefore, the conceptual framework was successful at explaining observed differences in online video creation. Specifically, a simplistic model with gender as the only explanatory variable found that men were more likely to create videos than women. Observed gender differences persisted after controlling for demographic characteristics; men continued to have a higher likelihood of making videos than women. Adding controls for attitudes toward computers eliminated the relationship between gender and the likelihood of video creation. Addition of controls for TAM also eliminated the relationship between gender and the likelihood of video creation.

The logistic regression models on the roles played in video creation helped further understand gender differences. The final model correctly classified 67.6% to 84.1% of cases for eight of the nine roles. The model was insufficient for the ninth role, likely reflecting the fact that only 3.6% of students reported this role (i.e., creating animation and machinima). Gender was not related to the likelihood of engaging in any of the eight roles after controlling for attitudes toward computers and TAM.

Multinomial logistic regression was used to explore gender differences in the number of videos created for students who created at least one video. A simplistic model with gender as the only explanatory variable found that gender was not related to the number of videos created. After inclusion of demographic characteristics, women were less likely (odds-ratio = 0.37) than men to make more than 10 videos rather than the reference level of 1 to 2 videos. Race / ethnicity and immigrant status were not related to the number of videos made. After controlling for attitudes toward computers, all the demographic variables of gender, race / ethnicity and immigrant status were no longer related to the number of videos made. After controlling for the TAM variables, the demographic variables of gender, ethnicity and immigrant status continued to be unrelated to the number of videos made.

The third research question asked whether the relationship between computer confidence and online video creation was different for men and women. The interaction between gender and computer confidence was not statistically significant, indicating that the relationship between computer confidence and online video creation does not vary between women and men. Hargittai and Walejko (2008) come to a similar conclusion that women and men with a similar level of computer skills have similar comfort with sharing their content online. In contrast, Hage (2006) and Ketelhut (2006) find women and men exhibit different relationships between computer confidence and mastery.

Impact of Attitudes Toward Computers

The analyses also point to the importance of attitudes toward computers, as measured using an adaptation of items from the ATCUS v2.0 scale (Morris, 2009), for predicting online video creation and the specific roles played in creating videos. The four subscales of computer confidence, tool use, positive attitudes and negative attitudes provided insights into different aspects of student behavior.

Men reported higher levels of computer confidence than women. Without inclusion of TAM concepts, the regression analyses showed higher levels of computer confidence increased the likelihood of creating online videos. Bringing in the TAM concepts eliminated this relationship. Even with the TAM concepts included, higher levels of computer confidence increased the likelihood that students would take on the three roles of fixing audio or video quality, editing with multiple video clips and planning, directing or producing a video. No relationship was found between higher levels of computer confidence and the other six roles measured, with the TAM concepts included. The connection between computer confidence and engagement in these three higher-level video editing roles is important to understand. These three roles are the three most complex and time consuming of the nine roles measured and they reflect high-end tasks with significant salary and career potential. Simply put, on a video creation project, the camera operator is paid much less on an hourly rate than the special effects creators and the director. Lower levels of computer confidence may be leading some students, including some women students, to miss out on skills development that will have future economic value.

Higher levels of computer confidence also increased the likelihood of creating more than ten videos, compared to 1 to 2 videos, with or without the inclusion of the TAM concepts. This study did not explore the consequences of creating a larger number of online videos on social reputation. Based on the display structure of YouTube that connects one video to other videos with similar content, it may be reasonable to assume that the chances of having one's videos discovered and spotlighted on YouTube would increase with the number of videos an individual shares online.

Men reported higher levels of positive attitudes toward computers than women. Higher ratings on the subscale of positive attitudes toward computers increased the likelihood that students would engage in two of the three highest roles measured, fixing audio or video quality and planning, directing or producing videos. The economic consequences of gaining such high-end skills are described in the previous discussion of computer confidence. Higher ratings on positive attitudes also increase the likelihood of handheld camera use, a noteworthy finding in the context of the rapid rate of change of the hardware used for video recording. With new cameras released each month, and storage and recording technologies undergoing rapid format changes, a positive attitude toward computers may help some students successfully embark on learning how to use a newly manufactured handheld camera.

Men reported higher ratings on positive attitudes toward computers and lower ratings on negative attitudes toward computers. But tool use negative attitudes toward computers are unrelated to the likelihood of creating online videos or playing specific roles in video creation, after controlling for the TAM concepts. Higher ratings on the subscale of tool use increases the likelihood of students creating 8 to 10 videos or more than 10 videos, compared to 1-2 videos without including the TAM concepts. However, this relationship changes when the TAM concepts are included, and the relevance of the tool use subscale is less clear.

Impact of TAM

The analyses of the questionnaire items related to TAM produced four factors: ease of video creation, value of video creation, self-perception of ability and comfort with social risk. These four factors provide a structure for conceptualizing how the TAM relates to the new activity of online video creation. Men reported stronger belief in ease of video creation than women. Stronger belief in the ease of video creation increased the likelihood of creating online videos (odds-ratio = 1.32), net of other variables in the complete model. Such beliefs also increased the likelihood of participation in two of the eight roles modeled: adding music, images or titles (odds-ratio = 1.45) and editing with multiple clips (odds-ratio = 1.52). These two roles are close to the high end in terms of sophisticated control of video content.

Men and women reported similar beliefs about the second TAM factor, the value of video creation. Stronger belief in the value of video creation was unrelated to the likelihood of creation of online videos but did increase the likelihood of the most complex of the eight roles modeled: planning, producing or directing a video.

Men expressed stronger belief in the third TAM factor, self-perception of ability, compared to women. Higher ratings on self-perception of ability increased the likelihood of two of the eight roles modeled: creating slideshows (odds-ratio = 1.28) and adding music, images or titles to videos (odds-ratio = 1.30). Measurement of self-perception of ability in this study links closely to the theoretical frameworks of learned helplessness and stereotype threat, This factor draws primarily from items on perception of the natural ability / talent of oneself and of others with the use of computers.

For the fourth TAM factor, men expressed stronger comfort with social risk compared to women. Higher ratings on comfort with social risk increased the likelihood for two of the eight roles modeled: performing on videos (odds-ratio = 1.28) and using cell phones and webcams to make videos (odds-ratio = 1.10). This relationship is logical given that these two roles would be most closely linked to creation of casual videos that include the potential for embarrassment. This relationship also reveals aspects of online video creation that are closest to social networking and general social interaction.

Women and men reported similar levels of experience with the Mac platform. Students reporting experience on a Mac platform were more likely than students without such experience to engage in seven of the eight roles modeled: performing; making slideshows, using cell phones and webcams, adding music, images and titles, fixing audio and video quality, editing with multiple video clips and planning, directing or producing a video. The breadth and depth of this set of relationships was striking. The odds-ratios for the seven roles ranged from 1.94 for planning, directing or producing a video to 3.04 for cell phone and webcam use. The Mac platform has been recognized for its overall ease of use (Cusumano, 2008) and this study's findings confirm the relevance of such ease of use to student behavior related to online video creation.

Roles of Other Variables

The three research questions for this study focus on gender. Nevertheless, in addition to gender differences, this study revealed differences in online video creation based on ethnicity and immigrant status. Regression analyses did not find any relationships between race / ethnicity and creation of online videos or the eight roles played in video creation. Results by immigrant status were striking and persistent. Even with the inclusion of attitudes toward computers and TAM, international students were less likely and second-generation immigrants were more likely than non-immigrants to make online videos. These differences by immigrant status persisted for two of the eight roles modeled. International students were less likely and second-generation students were more likely (odds-ratio = 2.08) than non-immigrants to perform in online videos and to use handheld cameras for online video creation.

High school size did not show a relationship to likelihood of online video creation but did show a relationship to two of the eight roles modeled: performing in videos and planning, directing or producing a video. Students attending a large high school, defined as having 1,000 to 2,000 students, were more likely to perform in a video (odds-ratio of

1.65) and more likely to plan, direct or produce a video (odds-ratio = 1.95) than students in the reference category of a medium size high school, defined as having 300 to 999 students. This finding may reflect the possibility that a large high school would have access to a local public programming station, a TV or video editing studio or other infrastructure to support these two roles.

Qualitative Inquiry Results

The results of the qualitative inquiry revealed a rich picture of student motivation and time commitment to video creation. Students spoke of being addicted to creating videos and the joy and the flow of editing videos, as well as the fear and nervousness of posting a video that might damage their online reputation with friends and family. Men described video-editing activities in detail and reported a high level of expertise with video editing. Women, with one notable exception, reported little video creation experience and little interest in learning how to create videos. The focus groups and interviews brought out two themes that were not part of the conceptual framework or literature review. The first was the role of humor and the perception by both men and women that men are more engaged and successful in creating humorous videos. The second was the differences in perceptions by men and women about the amount of leisure time available during high school and the appropriateness of dedicating such leisure time to acquiring and perfecting online video creation skills. Mattingly and Bianchi (2003) conclude from a national probability sample of time diary data that men tend to have more free time, and that men and women "experience free time very differently" (p. 999). Recurrence of these two themes in student comments indicates that the conceptual framework might be improved by their inclusion.

Students differentiated between the privacy implications of posting videos on Facebook and YouTube, and their comments were largely consistent with results reported by Lampe, Ellison and Steinfeld (2006), sharing the perception that videos on Facebook profiles are seen mostly other students at their institution, and not vulnerable to access from the general public.

This study is one of the first to look deeply at the creation of online videos by first-year undergraduate students. It revealed a range of gender differences in student behavior and drew on a conceptual framework with attitudes toward computers and TAM to explain gender differences in the newly popular activity of online video creation. This dissertation analyzed student behavior in online video creation and compared and contrasted the findings, through a literature review, with older, more thoroughly studied, activities such as computer programming and social networking. In general, the results of this study follow the results found from prior work on these topics. The next two sections discuss implications the new findings have for practice and for research.

Implications for Practice

This study builds on a large body of earlier work (see for example Cohoon & Aspray, 2006, Venkatesh and Morris, 2000) raising concerns about gender differences in computer confidence and brings this work into the new area of online video creation. K-12 and higher education professionals should explore ways to reduce barriers to video creation for women. This study found that men are more likely than women to make online videos, but the number of videos created does not vary by gender. These findings suggest that barriers to video creation may inhibit women from exploring this activity, but once a student makes his or her first video, gender does not the affect the number of videos made subsequently. College faculty and K-12 teachers should consider helping with that first introduction to video creation through required school projects as a way to help women students enter this field of activity. Hobbs and Frost (2003) argue that “work with visual media, interactive technologies and the expressive arts is beginning to be seen in parallel with the skills of reading and writing” (p. 330). As video creation becomes a task of daily communication, it will be of increasing importance that women acquire video creation skills at the same level that men do. Also, gender imbalances in the creation of videos will impact the diversity of viewpoints represented in the videos available for viewing by the general public. The findings suggest six distinct implications for practice.

First, educators should consider ways to build computer confidence for women. In this study, women reported significantly lower computer confidence than men, a finding consistent with earlier studies (Cohoon & Aspray, 2006; Zeldin & Pajares, 2000). Activities that build basic computer confidence for women may help address gender gaps in online video creation. Scaffolded training and class assignments that guide each student through the skills of creating videos could level the playing field so that when a more complex video assignment is assigned for a class project, women and men may approach such a project with similar hands-on experience with the software and hardware needed to make videos.

Second, K-12 educators should also consider the role of school video projects in contributing to gender differences in confidence with computers and video creation. In this study, a greater share of men (55%) reported making videos for school projects during their high school years compared to women (41%). Assuming high school classrooms are largely evenly balanced by gender, this differential points to an aspect where state and national standards can help guide practice at the classroom level. The qualitative data in this study suggest that, when group video projects are assigned during high school, the male students may be handling the video creation without including female students.

College faculty and high school teachers may want to consider explicit intervention when assigning group-based video projects in high school to ensure that women are participating in the technical aspects of video creation. In many contexts, scarcity of school technology resources (video-editing workstations, high-end video cameras) lead faculty and teachers to construct group-based video assignments. Rosser (1998) provides a literature review and describes concrete examples of group projects that unwittingly exclude active participation by minority and female students in STEM undergraduate courses; she describes mechanisms of exclusion and inclusion that are directly relevant to school projects for online video creation. If a video project is graded based just on the group's joint accomplishment and no value is given to each person gaining video creation skills, the faculty member is sending a clear message that acquisition of video creation skills in itself has negligible value. Such an assignment structure enables the less experienced group members, often the women, to hand over all video editing tasks to those in the group who already have such experience; the project is completed faster with less errors but the learning process has been damaged. As Rosser explains, "failure to rotate roles can become especially problematic when skills learned in the classroom need to be translated to the work setting" (1998, p. 85).

Third, educators should consider how school activities could contribute to student perceptions of the ease of creating videos. Men report higher levels of belief that video creation is an easy activity compared to women. The perception of ease of creating a video can be affected by several decisions at the school level. Simple recording activities with webcams during class can help students gain comfort with the technologies and lead eventually to more ambitious video-editing projects. Colleges have invested in broad-reaching instruction and interdisciplinary integration for the skills of reading, writing and mathematics through cross-curricular requirements. Multimedia literacy, including the ability to create video is increasingly seen as a skill broadly applicable to many disciplines and careers, and is now included in national standards (National Governors Association, 2010). Over the next decade, video and multimedia creation skills may be deemed essential for all college graduates and begin to be integrated in course across college curricula. Understanding which aspects of video creation are difficult for students (regardless of gender) to learn is an important first step to take.

Fourth, educators should help students to become aware of the value of creating videos. Given that women and men have similar perceptions about the value of video creation concept, building on student perception of the value of video creation may provide a mechanism to attract more women to be involved in the more complex aspects of video creation. Faculty and teachers can discuss the advantages of creating video as a medium for sharing information, creating instructional material and achieving a range of educational, entertainment and business-related objectives. Educators already show videos as part of the instructional experience in K-12 schools; adding in a discussion on the value of creating videos should not be a large adjustment to current practices.

Fifth, educators should continue to consider implications of gender differences pertaining to self-efficacy, stereotype threat and learned helplessness. The persistent issue of gender differences in perceived ability, especially in answers to items such as "I have a natural talent / ability to work with computers" brings into focus the theoretical frameworks of stereotype threat and learned helplessness. Some of the recommendations above may help build confidence for female students but beliefs about gender stereotypes are harder to change. In March 2010, Kathryn Bigelow became the first woman to receive the Academy Award for Best Director for the film *The Hurt Locker*, a development hailed in the news media. Providing avenues for female videographers to showcase their work on campus and build mentoring and collaboration relationships with each other may be helpful.

Sixth, educators should explore the role of comfort with social risk discussed in this study. These findings are closely related to student behaviors regarding social networking. In the regression analyses, the measure of willingness to take social risk is positively related to the likelihood of performing in videos and using webcams and cell phones. The educational value of these two roles is less clear than the educational value of knowing how to edit video or use a handheld camera. Reflecting on the examples from qualitative inquiry of students expressing respect for peers who have created particularly witty, timely or creative videos, the social value of performing in videos and using webcams and cell phones to share funny moments seems quite high.

Finally, educators should also consider interventions to help immigrant students explore online video creation. This study's findings related to immigrant status lead to potential implications regarding international students. International students show lower levels of engagement with performing in videos and using handheld cameras while second-generation immigrants show higher levels of engagement with both activities. Orientation programs for international students that pair them up with non-immigrants or second-generation immigrants may help create dialogue and help international students ease into online video creation.

Implications for Research

This study suggests the utility of the theoretical frameworks of self-efficacy, stereotype threat, learned helplessness and TAM for understanding observed gender differences in video creation. Although online video creation differs from computer programming and multimedia design in important ways, prior research examining these activities informed the creation of the conceptual framework that was tested in this study. This study has confirmed the usefulness of the ATCUS v2.0 instrument (Morris, 2009) in examining attitudes toward computers.

The findings suggest seven areas for future research. First, additional research into the processes underlying required school video projects assigned to groups of students could shed light on the result from this study's findings that men report higher levels of participation in required school projects than women. Group-based required school projects may not be serving the instructional goals that teachers and educational administrators have set for them. Research into the processes by which women may be handing over control for the development of technology and video editing skills to the men in a group video project could be helpful in informing the process by which educators structure the process and grading of such projects. Group projects have been a common teaching methodology for schools that do not have enough equipment or computers to support individual video creation projects. Research that contrasts group versus individual assignments in terms of acquisition of video creation and other multimedia literacy skills by women may be warranted. Clustered analysis of women who create highly edited videos may yield insights into the aspects of school projects that make it easier or harder for women to participate fully in the video-editing processes.

Second, future research should further explore issues that emerged in the qualitative analyses but were not considered on the questionnaire. For example, investigation of humor and leisure time as areas that may affect gender differences in online video creation may yield useful insights. The concept of use of time, especially the role of leisure time, also came up repeatedly in the qualitative inquiry. The perception by youth, especially women, that they lack enough leisure time during high school to fully explore video creation skills is especially relevant to the context of a highly selective research university. Students discussed time pressure from their classes and extracurricular activities as one reason why they would wait for vacation or summer break for video creation activities. Replication of this research at a different type of institution such as a community college or a large state college that is not highly selective may yield insight into whether women aiming for highly selective research universities place a high premium on time management in high school and as a result do not engage in video creation activities that could build their multimedia literacy skills.

Third, researchers should explore the characteristics of students who preference video creation activities during high school compared to students who preference other types of activities. Such time management differences may also help explain gender differences in perception and allocation of leisure time. Video editing is a deeply timeintensive activity at present, although future innovations in video-editing software would be expected to reduce the time commitments needed. With the assumption that high school students dedicate leisure time to activities that they find valuable, additional research could help explain why women students are finding video editing to be a less valuable use of their leisure time than men. Gaining expertise in video creation takes a significant time commitment and it is possible that women are making a short-term decision in terms of time management in high school that damages multimedia literacy gains in the long term. Women have reversed the gender gap in college enrollment in the last two decades and trends show declining enrollment and persistence of men in undergraduate education (Goldin, Katz, & Kuziemko, 2006). Researchers may want to examine time spent during high school on video creation and editing as a possible source of distraction from traditional activities to prepare for college.

Fourth, although limited, the qualitative component of this study provided insight into the psychological and social aspects of why students create and share online videos. Additional qualitative inquiry on this topic would likely unearth valuable new information about the changing nature of social relationships for today's undergraduate students. Qualitative inquiry revealed that college students have a nuanced understanding of differences between Facebook and YouTube, the social consequences of certain types of videos, and the limitations of online privacy settings. These topics have not been extensively explored in this study, and provide scope for additional research.

A fifth area for future research is gender differences in subject content for student created videos. This study, by design, did not explore subject content of student created videos. Student comments did reveal a wider range of topics for videos than expected.

Video content included leisure, social, extracurricular, family and school activities. Exploration of how video content varies by gender may help further explain gender differences in online video creation. The content of a video may affect the perception of appropriate level of editing needed. For example, a celebration video created for a parent's 50th birthday would require much more editing than a video of a goal kick from a high school football game. Gender differences in content of videos, may well affect gender differences in the sophistication of the videos created, a topic beyond the scope of this study.

Sixth, future research should explore student behavior differences across popular video sharing platforms. Student comments contrasting YouTube and Facebook revealed a level of sophistication in the choices they made to put videos on one platform as opposed to another platform. In terms of the TAM, YouTube and Facebook provide very different settings for video sharing in terms of social influence (including privacy) and perceived usefulness; they are comparable in perceived ease of use. Future research may be helpful in defining these differences further; it may be that some aspects of the conceptual framework would be more relevant to YouTube while others would be more relevant to Facebook.

Seventh, additional inquiry is required to test the generalizability of the findings from this study. As discussed in Chapter 3, the results of this study are representative of this university and generalizable to other highly selective research universities in the United States. The ATCUS v2.0 instrument has successfully undergone psychometric testing but additional research to evaluate and improve the psychometric properties of the remainder of the questionnaire would be a first step to replicating this study at other institutions with different demographic characteristics in terms of student academic preparation. Individual items in the questionnaire may be adapted and expanded to provide a more complete description of the conceptual framework proposed.

Finally, further research designs will need to take into account the rapidly changing nature of the field of online video creation. The technologies that enable online video creation change quickly. New models of cell phones and handheld devices are transforming the process of making online videos with each new model and version. This area of research is structurally affected by development of new technologies, hardware and software. This study provides a snapshot at one point in time at one institution of the varied and changing activity of online video creation. For example, in 2011, students can now edit video on the iPhone directly without need for a computer, high-speed Internet access or video-editing software. This capability did not exist when data was collected for this study in September 2010.

Conclusion

This study explored gender differences in the creation of online videos among undergraduate students attending a highly selective research university. A better understanding of gender differences in these outcomes is a first step toward identifying and designing interventions at the college level that encourage women to consider courses, majors and careers that build on video creation skills and lead to economic benefits in terms of salaries and job security. The results provide context for education and technology policy as the field of online video continues to grow at an unprecedented rate. Johnston and Bloom (2010) synthesize the results of several recent studies on student creation of videos, blogs and other web-savvy content to conclude, “students who engage in the process of producing their own media become more savvy consumers of media and become proficient in working in shared spaces that are occupied by diverse populations of users" (p. 114).

At present, women are less positive about computers and use computers less frequently than men (Mitra et al., 2000). Historically, women have shied away from college majors and careers in computing, especially multimedia design (Camp, 1997; Cohoon & Aspray, 2006). In the United States, game and video design, and multimedia authorship are gendered (predominantly male), ethnically stratified, careers with strong earning potential. In contrast, such careers may be less defined by gender in South Asian countries (Teo, 2008). Programs to encourage young women to consider careers in STEM (science, technology engineering and mathematics) have received a substantial investment of public and private funds for several decades. Understanding gender-related effects on online video creation informs public investment in college-level outreach programs and coursework to attract women to consider majors and careers that require video creation skills.

The evocative and persuasive powers of online video are tremendous and the growing popularity of watching online videos on a daily basis (Madden, 2009) emphasizes the importance of including a diversity of voices in the videos that are viewed. Gender differences in creation of online video may be having negative impacts on the variety and diversity of online videos available. This study describes the young people who are creating online videos and, perhaps more importantly, focuses attention on young people who are not yet expressing themselves in this new medium of video.

The doubling of online video use in the last three years (Madden 2009) and the increased integration of online video in embedded web pages, mobile-friendly displays and cell phone applications increases the importance of study of this new medium. It is likely that use of online video will continue to grow before reaching a plateau, and that newer technologies will make it easier and faster to create, remix and repurpose video clips. Studies have not yet considered in sufficient detail questions around who are, and who are not, creating online videos today, as well as whose videos are, and whose videos are not, reaching large audiences. The centralized media of network and cable television have been studied in some depth on topics related to gender and effective representation of sub-populations. A similar emphasis is likely to become important when looking at the fast-growing social media empires of Facebook and YouTube.

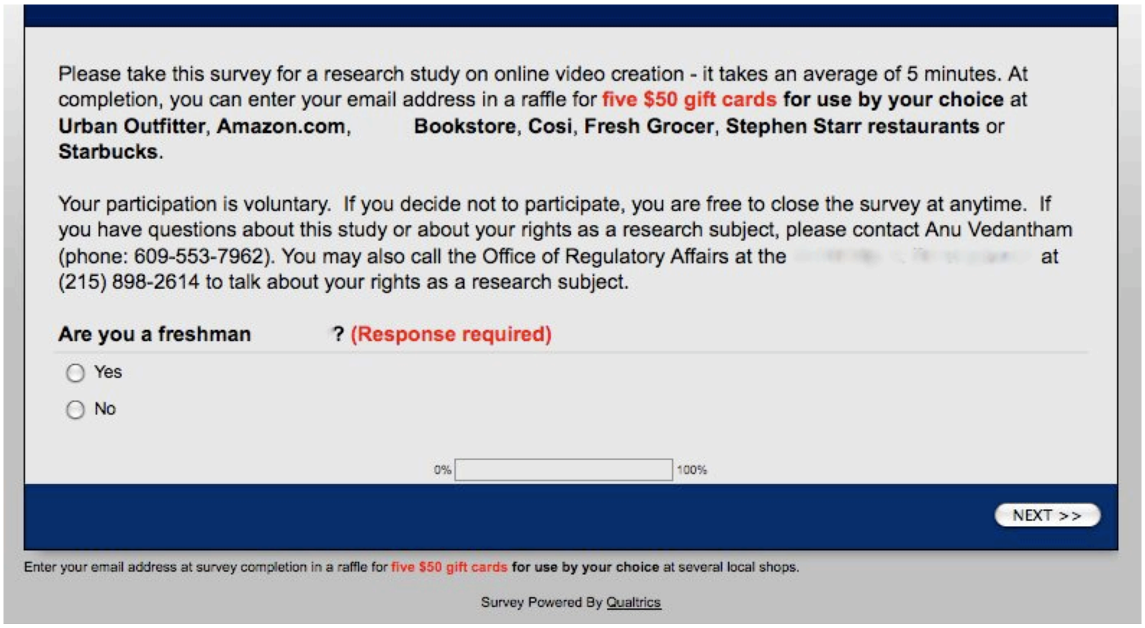
Significant gaps exist in online video creation across genders. The use of online video creation assignments as part of graded course activities during high school and college therefore raises concerns for gender equity. Since gaps exist by gender in self-efficacy and mastery, a large-scale move to video-based instruction and integration of video into the instructional context may be unwise without taking into account gender-related factors. The results of this study indicate the need for college administrators to explore programs and interventions that encourage risk-taking, build confidence and provide scaffolding for all college students to master video creation.

APPENDICES

Appendix 1-A

Questionnaire Instrument - Online Version

Screen shots of the questionnaire in online format are provided in sequential order with comments. The university name is masked as needed on individual screens.



Please take this survey for a research study on online video creation - it takes an average of 5 minutes. At completion, you can enter your email address in a raffle for **five $50 gift cards for use by your choice** at **Urban Outfitter**, **Amazon.com**, **Bookstore**, **Cosi**, **Fresh Grocer**, **Stephen Starr restaurants** or **Starbucks**.

Your participation is voluntary. If you decide not to participate, you are free to close the survey at anytime. If you have questions about this study or about your rights as a research subject, please contact Anu Vedantham (phone: 609-553-7962). You may also call the Office of Regulatory Affairs at the at (215) 898-2614 to talk about your rights as a research subject.

Are you a freshman ? (Response required)

- Yes
- No

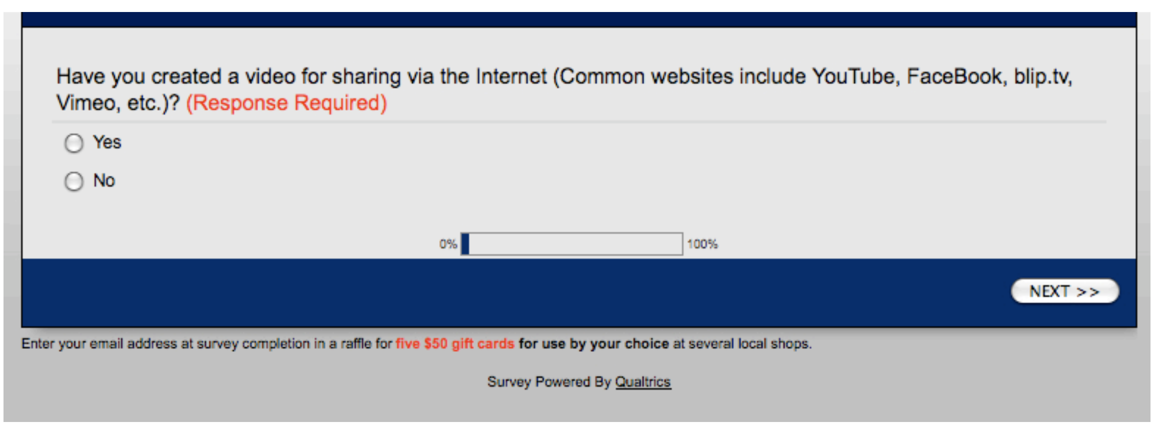
0% 100%

NEXT >>

Enter your email address at survey completion in a raffle for **five $50 gift cards for use by your choice** at several local shops.

Survey Powered By Qualtrics

Screen 1



Have you created a video for sharing via the Internet (Common websites include YouTube, FaceBook, blip.tv, Vimeo, etc.)? (Response Required)

- Yes
- No

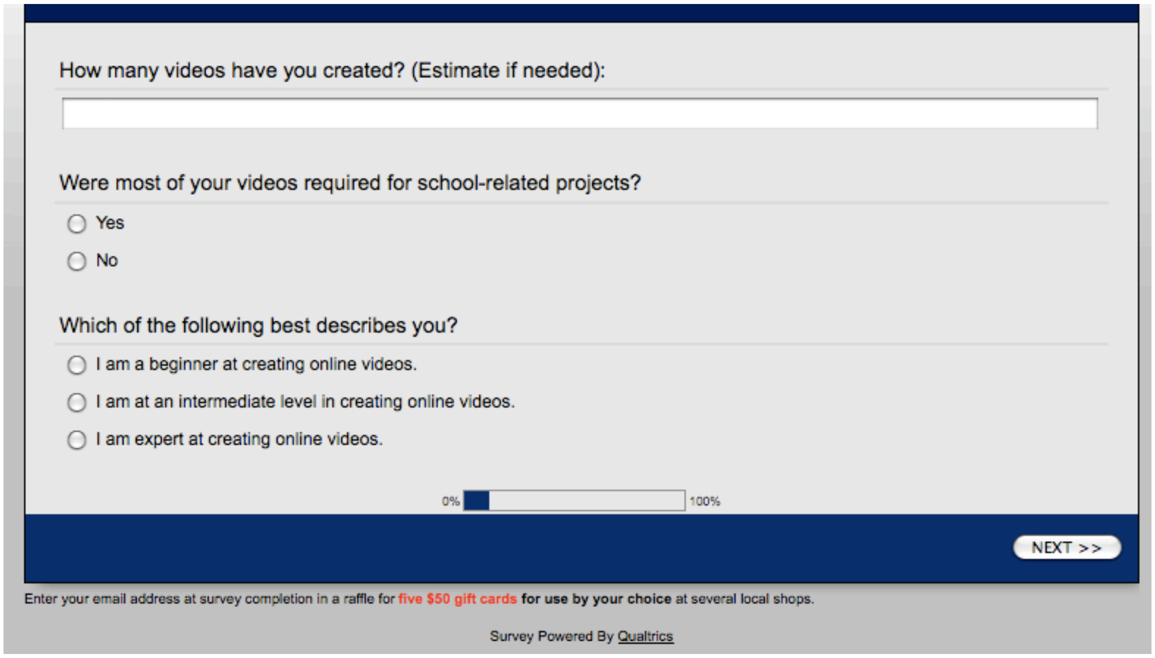
0% 100%

NEXT >>

Enter your email address at survey completion in a raffle for **five $50 gift cards for use by your choice** at several local shops.

Survey Powered By Qualtrics

Screen 2


How many videos have you created? (Estimate if needed):

Were most of your videos required for school-related projects?

- Yes
- No

Which of the following best describes you?

- I am a beginner at creating online videos.
- I am at an intermediate level in creating online videos.
- I am expert at creating online videos.

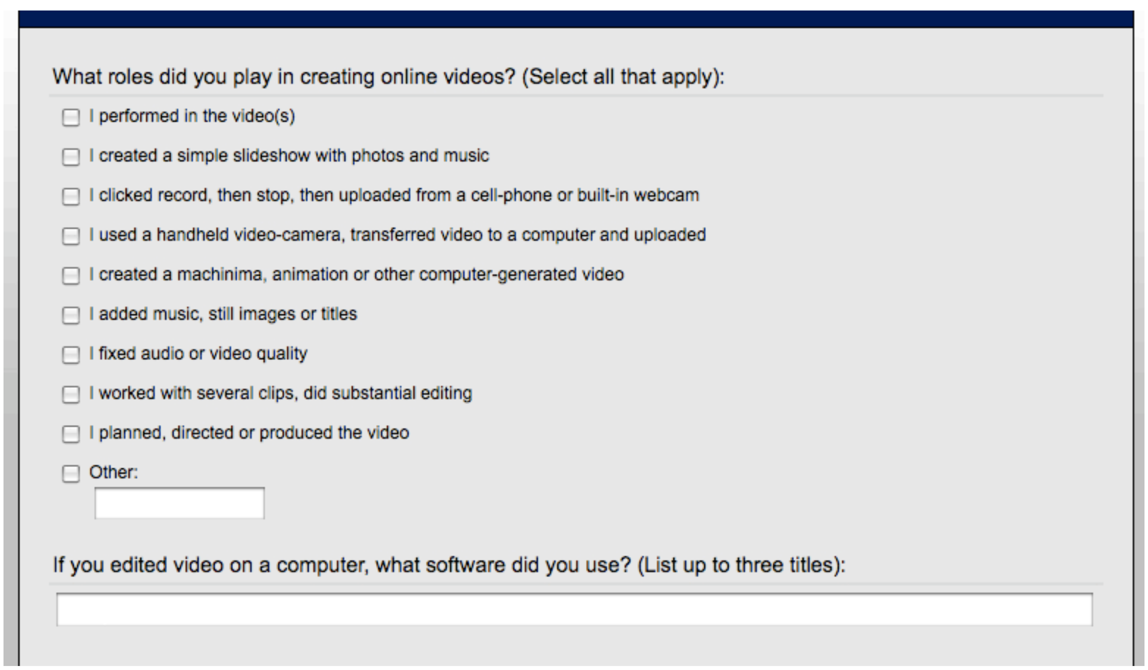
0% 100%

NEXT >>

Enter your email address at survey completion in a raffle for **five $50 gift cards** **for use by your choice** at several local shops.

Survey Powered By Qualtrics

Screen 3


What roles did you play in creating online videos? (Select all that apply):

- I performed in the video(s)
- I created a simple slideshow with photos and music
- I clicked record, then stop, then uploaded from a cell-phone or built-in webcam
- I used a handheld video-camera, transferred video to a computer and uploaded
- I created a machinima, animation or other computer-generated video
- I added music, still images or titles
- I fixed audio or video quality
- I worked with several clips, did substantial editing
- I planned, directed or produced the video
- Other:

If you edited video on a computer, what software did you use? (List up to three titles):

Screen 4, Part 1

How important were the following factors in your **decision** to make the video(s)?

	Not important	Not very important	Somewhat Important	Very Important	Extremely Important
Friends and classmates	○	○	○	○	○
Fame, online reputation	○	○	○	○	○
Having fun on a computer	○	○	○	○	○
Influencing others, advocacy	○	○	○	○	○
Desire to improve video creation skills	○	○	○	○	○

0% 100%

NEXT >>

Enter your email address at survey completion in a raffle for five $50 gift cards **for use by your choice** at several local shops.

Survey Powered By Qualtrics

Screen 4, Part 2

Please choose the response that best reflects how you feel about each statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Some people have natural ability / talent to work with computers	○	○	○	○	○
I have natural ability / talent to work with computers	○	○	○	○	○
Others sometimes make me feel nervous about my ability to use computers	○	○	○	○	○
When working on computer-based projects, I prefer working alone to working with a group	○	○	○	○	○
Most people I spend time with make online videos	○	○	○	○	○
It is easy to make online videos	○	○	○	○	○
It is easy to learn how to make online videos	○	○	○	○	○
Making online videos is a worthwhile activity	○	○	○	○	○
Online videos can influence people's opinions	○	○	○	○	○
I am concerned about privacy controls for online videos.	○	○	○	○	○

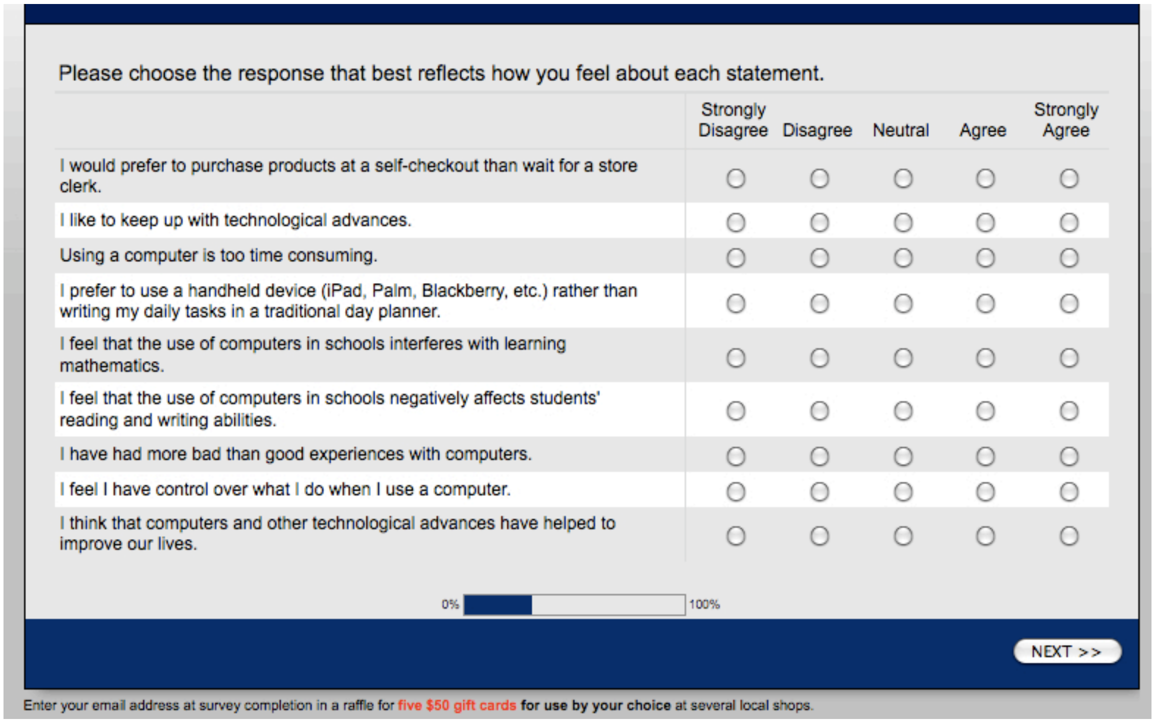
0% 100%

NEXT >>

Enter your email address at survey completion in a raffle for five $50 gift cards **for use by your choice** at several local shops.

Survey Powered By Qualtrics

Screen 5



Please choose the response that best reflects how you feel about each statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I would prefer to purchase products at a self-checkout than wait for a store clerk.	○	○	○	○	○
I like to keep up with technological advances.	○	○	○	○	○
Using a computer is too time consuming.	○	○	○	○	○
I prefer to use a handheld device (iPad, Palm, Blackberry, etc.) rather than writing my daily tasks in a traditional day planner.	○	○	○	○	○
I feel that the use of computers in schools interferes with learning mathematics.	○	○	○	○	○
I feel that the use of computers in schools negatively affects students' reading and writing abilities.	○	○	○	○	○
I have had more bad than good experiences with computers.	○	○	○	○	○
I feel I have control over what I do when I use a computer.	○	○	○	○	○
I think that computers and other technological advances have helped to improve our lives.	○	○	○	○	○

0% 100%

NEXT >>

Enter your email address at survey completion in a raffle for **five $50 gift cards** **for use by your choice** at several local shops.

Screen 6

Please choose the response that best reflects how you feel about each statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have problems working with computerized items such as cell phones and mp3 players.	○	○	○	○	○
When learning a new task, I would rather follow an interactive computer program than learn from someone in person.	○	○	○	○	○
When searching for research information, I would rather read books, magazines, and newspapers than browse the Internet.	○	○	○	○	○
I would like to have more computerized features in my car such as GPS, DVD player, etc.	○	○	○	○	○
I enjoy using Power Point or other computerized visual aids to accompany my presentations.	○	○	○	○	○
I feel that computers limit my creativity.	○	○	○	○	○
I would rather shop online than in a physical store.	○	○	○	○	○
I feel comfortable hooking up my computer and installing software.	○	○	○	○	○

You are half-way through the survey. At completion, you can enter your email address in a raffle for **five $50 gift cards for use by your choice** at **Urban Outfitter**, **Amazon.com**, **Penn Bookstore**, **Cosi**, **Fresh Grocer**, **Stephen Starr restaurants** and **Starbucks**.

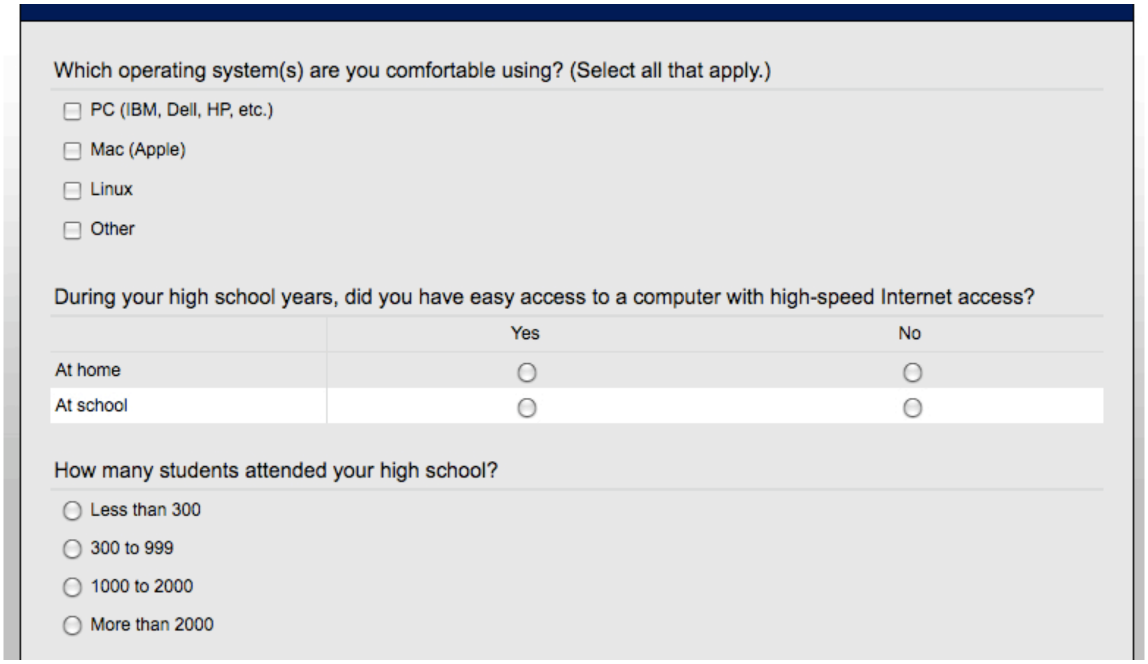
0% 100%

NEXT >>

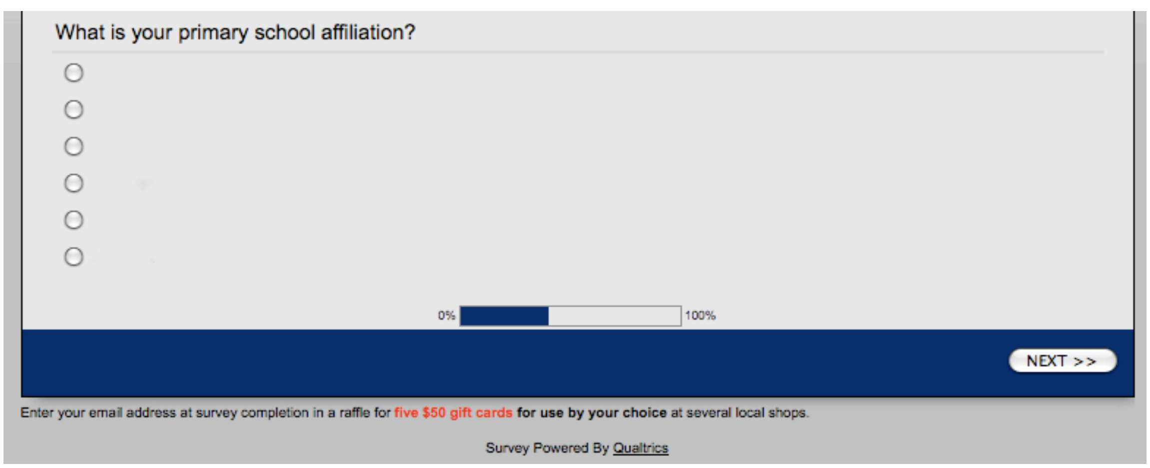
Enter your email address at survey completion in a raffle for **five $50 gift cards for use by your choice** at several local shops.

Survey Powered By Qualtrics

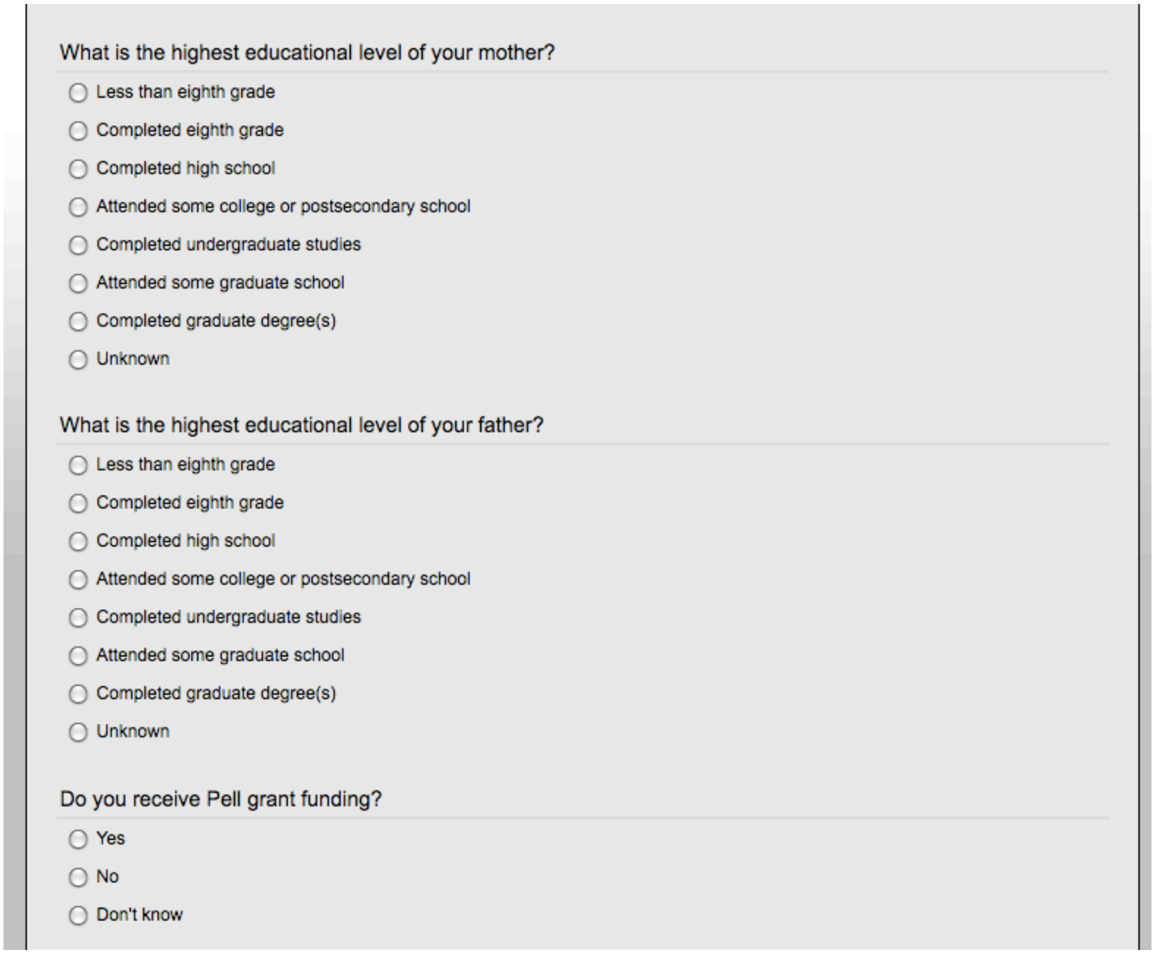
Screen 7



Screen 8, Part 1



Screen 8, Part 2



What is the highest educational level of your mother?

- Less than eighth grade
- Completed eighth grade
- Completed high school
- Attended some college or postsecondary school
- Completed undergraduate studies
- Attended some graduate school
- Completed graduate degree(s)
- Unknown

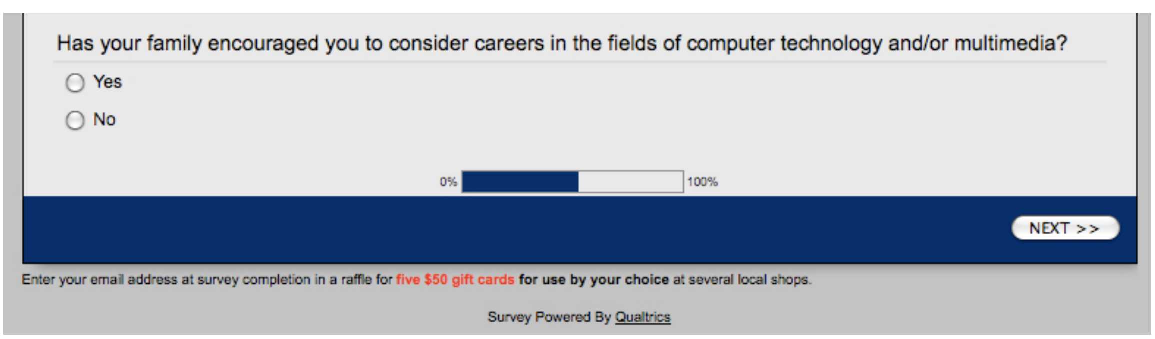
What is the highest educational level of your father?

- Less than eighth grade
- Completed eighth grade
- Completed high school
- Attended some college or postsecondary school
- Completed undergraduate studies
- Attended some graduate school
- Completed graduate degree(s)
- Unknown

Do you receive Pell grant funding?

- Yes
- No
- Don't know

Screen 9, Part 1



Has your family encouraged you to consider careers in the fields of computer technology and/or multimedia?

- Yes
- No

0% 100%

NEXT >>

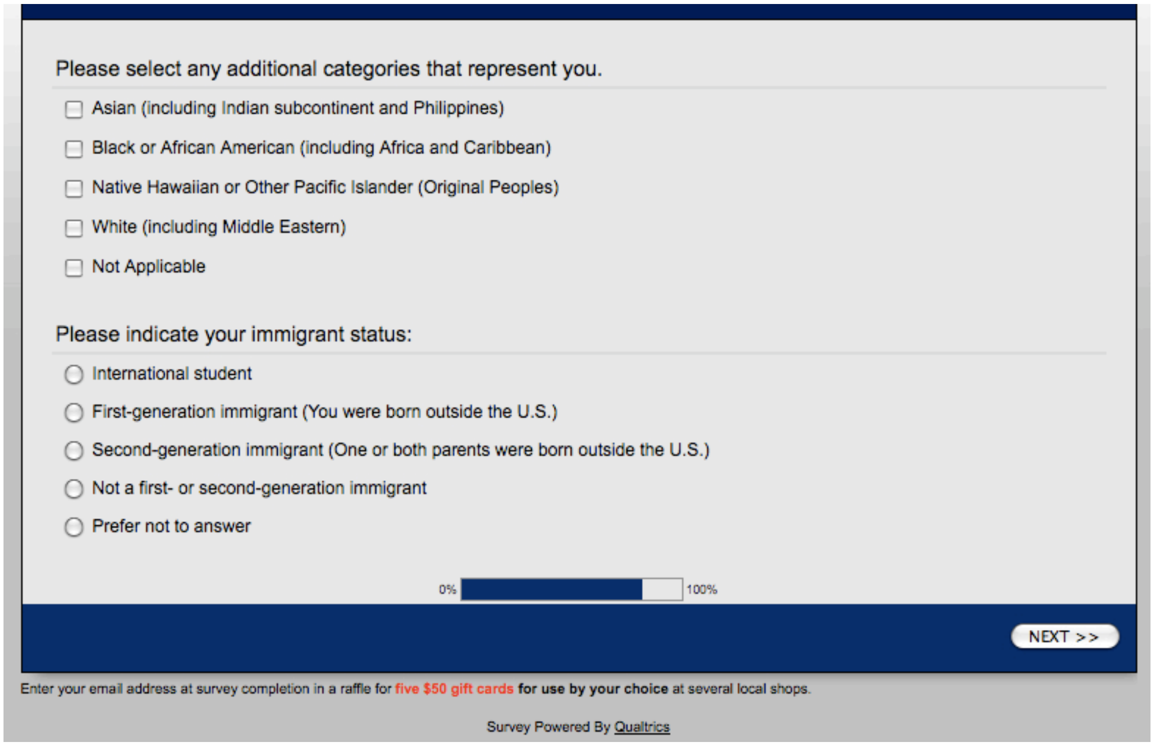
Enter your email address at survey completion in a raffle for five $50 gift cards for use by your choice at several local shops.

Survey Powered By Qualtrics

Screen 9, Part 2


Gender:
Male
Female
Are you Hispanic / Latino (including Spain)?
Yes
No
Which of the following categories best represents you?
American Indian or Alaska Native (including all Original Peoples of the Americas)
Asian (including Indian subcontinent and Philippines)
Black or African American (including Africa and Caribbean)
Native Hawaiian or Other Pacific Islander (Original Peoples)
White (including Middle Eastern)
Prefer not to answer
0%
100%
NEXT >>
Enter your email address at survey completion in a raffle for five $50 gift cards for use by your choice at several local shops.
Survey Powered By Qualtrics

Screen 10



Please select any additional categories that represent you.

- ☐ Asian (including Indian subcontinent and Philippines)
- ☐ Black or African American (including Africa and Caribbean)
- ☐ Native Hawaiian or Other Pacific Islander (Original Peoples)
- ☐ White (including Middle Eastern)
- ☐ Not Applicable

Please indicate your immigrant status:

- ○ International student
- ○ First-generation immigrant (You were born outside the U.S.)
- ○ Second-generation immigrant (One or both parents were born outside the U.S.)
- ○ Not a first- or second-generation immigrant
- ○ Prefer not to answer

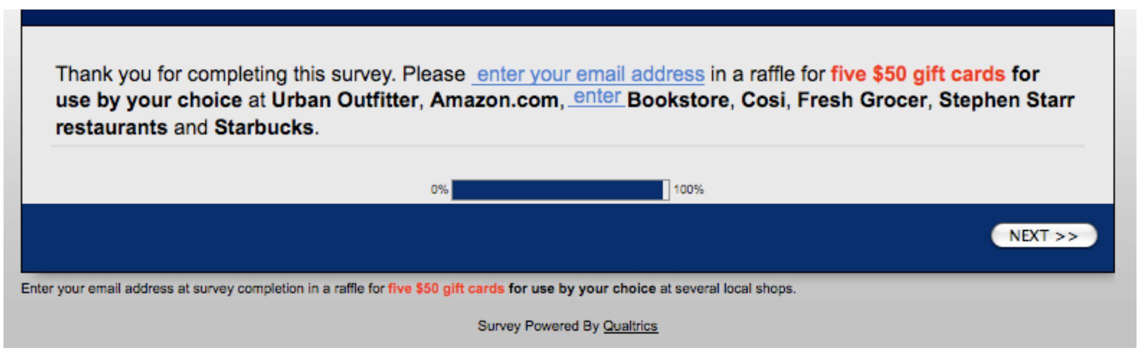
0% 100%

NEXT >>

Enter your email address at survey completion in a raffle for five $50 gift cards **for use by your choice** at several local shops.

Survey Powered By Qualtrics

Screen 11



Thank you for completing this survey. Please enter your email address in a raffle for **five $50 gift cards for use by your choice** at **Urban Outfitter**, **Amazon.com**, enter **Bookstore**, **Cosi**, **Fresh Grocer**, **Stephen Starr restaurants** and **Starbucks**.

0% 100%

NEXT >>

Enter your email address at survey completion in a raffle for five $50 gift cards **for use by your choice** at several local shops.

Survey Powered By Qualtrics

Screen 12

Appendix 1-B

Questionnaire Instrument - Paper Version

Research Study on Online Video Creation

Please take this survey for a research study on online video creation - it takes an average of **5 minutes**. At completion, you can enter your email address in a raffle for **five $50 gift cards** for use by your choice at **Urban Outfitter, Amazon.com, Bookstore, Cosi, Fresh Grocer, Stephen Starr restaurants or Starbucks**.

Your participation is voluntary. If you decide not to participate, you are free to close the survey at anytime. If you have questions about this study or about your rights as a research subject, please contact Anu Vedantham (phone: 609-553-7962). You may also call the Office of Regulatory Affairs [contact info here] to talk about your rights as a research subject.

1. Have you created a video for sharing via the Internet (Common websites include YouTube, Facebook, blip.tv, Vimeo, etc.)? *(Circle one)*

Yes **No**

If no, please go to question 8.

2. How many videos have you created? *(Estimate if needed)* ________

3. Were most of your videos required for school-related projects? *(Circle one)*

Yes **No**

4. Which of the following best describes you? *(Check one)*

____ I am a beginner at creating online videos.

____ I am at an intermediate level in creating online videos.

____ I am expert at creating online videos.

5. What roles did you play in creating online videos? *(Check all that apply)*

___ I performed in the video(s)

___ I created a simple slideshow with photos and music

___ I clicked record, then stop, then uploaded from a cell-phone or built-in webcam

___ I used a handheld video-camera, transferred video to a computer and uploaded

___ I created a machinima, animation or other computer-generated video

___ I added music, still images or titles

___ I fixed audio or video quality

___ I worked with several clips, did substantial editing

___ I planned, directed or produced the video

___ Other: *(please describe)*

6. If you edited video on a computer, what software did you use? (List up to three titles)

7. How important were the following factors in your decision to make the video(s)? *(Check one box per row)*

	Not important	Not very important	Somewhat important	Important	Very Important
Friends and classmates					
Fame, online reputation					
Having fun on a computer					
Influencing others, advocacy					
Desire to improve video creation skills					

8. Please choose the response that best reflects how you feel about each statement. *(Check one box per row)*

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Some people have natural ability / talent to work with computers					
I have natural ability / talent to work with computers					
Others sometimes make me feel nervous about my ability to use computers					
When working on computer-based projects, I prefer working alone to working with a group.					
Most people I spend time with make online videos					
It is easy to make online videos					
It is easy to learn how to make online videos					
Making online videos is a worthwhile activity					
Online videos can influence people's opinions					
I am concerned about privacy controls for online videos.					

9. Please choose the response that best reflects how you feel about each statement. *(Check one box per row)*

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I would prefer to purchase products at a self-checkout than wait for a store clerk.					
I like to keep up with technological advances.					
Using a computer is too time consuming.					
I prefer to use a handheld device (iPad, Palm, Blackberry, etc.) rather than writing my daily tasks in a traditional day planner.					
I feel that the use of computers in schools interferes with learning mathematics.					
I feel that the use of computers in schools negatively affects students' reading and writing abilities.					
I have had more bad than good experiences with computers.					
I feel I have control over what I do when I use a computer.					
I think that computers and other technological advances have helped to improve our lives.					

10. Please choose the response that best reflects how you feel about each statement. *(Check one box per row)*

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have problems working with computerized items such as cell phones and mp3 players.					
When learning a new task, I would rather follow an interactive computer program than learn from someone in person.					
When searching for research information, I would rather read books, magazines, and newspapers than browse the Internet.					

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I would like to have more computerized features in my car such as GPS, DVD player, etc.					
I enjoy using Power Point or other computerized visual aids to accompany my presentations.					
I feel that computers limit my creativity.					
I would rather shop online than in a physical store.					
I feel comfortable hooking up my computer and installing software.					

11. Which operating system(s) are you comfortable using? *(Check all that apply)*

___ PC (IBM, Dell, HP, etc.) ___ Linux

___ Mac (Apple) ___ Other

12. During your high school years, did you have easy access to a computer with high-speed Internet access? *(Circle one)*

At home: Yes No

At school: Yes No

13. How many students attended your high school? *(Circle one)*

Less than 300 **300 to 999** **1000 to 2000** **More than 2000**

14. What is your primary school affiliation? *(Check one)*

___ School of Arts & Sciences (SAS) - the College

___ Wharton

___ Engineering

___ Nursing

___ Other

___ Not sure

15. What is the highest educational level of your **mother**? *(Check one)*

___ Less than eighth grade

___ Completed eighth grade

___ Completed high school

___ Attended some college or postsecondary school

___ Completed undergraduate studies

___ Attended some graduate school

___ Completed graduate degree(s)

___ Unknown

16. What is the highest educational level of your **father**? *(Check one)*

___ Less than eighth grade

___ Completed eighth grade

___ Completed high school

___ Attended some college or postsecondary school

___ Completed undergraduate studies

___ Attended some graduate school

___ Completed graduate degree(s)

___ Unknown

17. Do you receive Pell grant funding?

Yes **No** **Don't know**

18. Has your family encouraged you to consider careers in the fields of computer technology and/or multimedia?

Yes **No**

19. Gender:

Male **Female**

20. Are you Hispanic / Latino (including Spain)?

Yes **No**

21. Which of the following categories best represents you? *(Check one)*

___ American Indian or Alaska Native (including all Original Peoples of the Americas)

___ Asian (including Indian subcontinent and Philippines)

___ Black or African American (including Africa and Caribbean)

___ Native Hawaiian or Other Pacific Islander (Original Peoples)

___ White (including Middle Eastern)

___ Prefer not to answer

22. Please select any additional categories that represent you. *(Check all that apply)*

___ American Indian or Alaska Native (including all Original Peoples of the Americas)

___ Asian (including Indian subcontinent and Philippines)

___ Black or African American (including Africa and Caribbean)

___ Native Hawaiian or Other Pacific Islander (Original Peoples)

___ White (including Middle Eastern)

___ Not Applicable

23. Please indicate your immigrant status: *(Check one)*

___ International student

___ First-generation immigrant (You were born outside the U.S.)

___ Second-generation immigrant (One or both parents were born outside the U.S.)

___ Not a first- or second-generation immigrant

___ Prefer not to answer

Appendix 2

Initial version of questionnaire instrument

This survey explores online video creation and contains 25 items. Average completion time is 10 minutes.

1. Have you created a video for sharing via the Internet (Common websites include YouTube, Facebook, blip.tv, Vimeo, etc.)? (Select one): Yes / No. If No, skip to question 8.
2. How many such videos have you created? (Please estimate as needed): Open-ended numerical response.
3. Were most or all of these videos required for school-related projects? (Select one): Yes/No.
4. Which of the following best describes you? (Select one).
   4.1. I am a beginner at creating online videos.
   4.2. I am at an intermediate level in creating online videos.
   4.3. I am expert at creating online videos.
5. What roles did you play in creating online videos? (Select all that apply):
   5.1. I performed in the video(s) but had no other role in creation
   5.2. I created a simple slideshow with photos and music
   5.3. I clicked record, then stop, then uploaded from a cell-phone or built-in webcam
   5.4. I used a handheld video-camera, transferred video to a computer and uploaded
   5.5. I created a machinima, animation or other computer-generated video
   5.6. I added music, still images or titles
   5.7. I fixed audio or video quality

5.8. I worked with several clips, did substantial editing

5.9. I planned, directed or produced the video

5.10. Other: (Please specify: Open-ended response).

6. If you edited video on a computer, what software did you use? List up to three titles: Open-ended response.

7. How important were the following factors in your decision to make these video(s)? (Select one): Five-level Likert Scale - Not important / A little important / Somewhat important / Important / Very Important.

   7.1. Friends and classmates

   7.2. Fame, online reputation

   7.3. Having fun on a computer

   7.4. Influencing others, advocacy

   7.5. Desire to improve video creation skills

8. During your last year in high school, how much time did you spend in a typical week on the following? (Select one): None / Less than 5 hours / 5 to 10 hours / 10 to 20 hours / More than 20 hours.

   8.1. Socializing with friends in person

   8.2. Online Social networking (Facebook, MySpace, IM or Chat, etc.)

   8.3. Playing video or online computer games

   8.4. Web design or multimedia design

   8.5. Computer programming

9. Please indicate your reaction to the following statements (Select one): Five-level Likert Scale: Strongly Disagree / Disagree / No Opinion / Agree / Strongly Agree.

9.1. Some people have natural ability / talent to work with computers.

9.2. I have natural ability / talent to work with computers.

9.3. Others sometimes make me feel nervous about my ability to use computers.

9.4. When working on computer-based projects, I prefer working alone to working with a group.

9.5. Most people I spend time with make online videos.

9.6. It is easy to make online videos.

9.7. It is easy to learn how to make online videos.

9.8. Making online videos is a worthwhile activity.

9.9. Online videos can influence people's opinions.

10. Please choose the response that best reflects how you feel about each statement below: (Select one): Five-choice Likert Scale: Strongly Disagree / Disagree / Neutral / Agree / Strongly Agree.

    10.1. I enjoy using the computer to pass time and / or for fun.

    10.2. I would prefer to purchase products at a computerized self-checkout than wait for a store clerk.

    10.3. I like to keep up with computers and other technological advances.

    10.4. I know that I will understand how to use computers.

    10.5. Using a computer is too time consuming.

    10.6. I feel that knowing how to use computers would help me with my future job.

    10.7. I prefer to use a Smartphone, iPhone or PDA (Palm Pilot, Blackberry, etc.) rather than writing my daily tasks in a traditional day planner.

    10.8. I like to play video games.

10.9. I prefer to use an automated-teller machine (ATM) rather than go into the bank.

10.10. I have had more bad than good experiences using computers to get things done.

10.11. I feel I have control over what I do when I use a computer.

11. Please choose the response that best reflects how you feel about each statement below: (Select one): Five-choice Likert Scale: Strongly Disagree / Disagree / Neutral / Agree / Strongly Agree.

11.1. I feel that the use of computers in schools will negatively affect people's reading and writing abilities.

11.2. I feel that the use of computers in schools will interfere with people's ability to learn mathematics.

11.3. I think that computers and other technological advances have helped to improve our lives.

11.4. I have problems programming computerized items such as cell phones, VCR's and mp3 players.

11.5. When learning a new task, I would rather follow an interactive computer program than learn from someone in person.

11.6. When searching for research information, I would rather read books, magazines, and newspapers than browse the Internet.

11.7. I would like to have more computerized features in my car such as GPS, DVD or CD player, etc.

11.8. I enjoy using Power Point or other computerized visual aids to accompany my presentations.

11.9. I feel that computers limit my creativity.

11.10. I would rather shop online than in a physical store.

11.11. I feel comfortable hooking up my computer and installing software.

12. During your high school years, did you have easy access to a computer with high-speed Internet access? (Select one): Yes / No.

    12.1. At home

    12.2. At school

13. How many students attended your high school? (Select one): Under 300 / 300 to 999 / 1000 to 2000 / More than 2000.

14. What is your school? (Select one): Five choices - four school names and Don't Know.

15. What is the highest educational level of your mother? (Select one): Grammar School or less / Some high school / High School Graduate / Post secondary School Other than College / Some College / College Graduate / Some graduate school / Graduate degree / Unknown.

16. What is the highest educational level of your father? (Select one): Grammar School or less / Some high school / High School Graduate / Post secondary School Other than College / Some College / College Graduate / Some graduate school / Graduate degree / Unknown.

17. Are you receiving Pell grant aid? (Select one): Yes / No / Don't Know.

18. What careers are you considering at present? (Please list only two possibilities): Open-ended response.

19. Has your family encouraged you to consider careers in the fields of computer technology or multimedia? (Select one): Yes / No.
20. Gender (Select one or none): Male / Female
21. Are you Hispanic / Latino (including Spain)? (Select one): Yes/No
22. Which of the following categories best represents you? (Select one.):
    22.1. American Indian or Alaska Native (including all Original Peoples of the Americas)
    22.2. Asian (including Indian subcontinent and Philippines)
    22.3. Black or African American (including Africa and Caribbean)
    22.4. Native Hawaiian or Other Pacific Islander (Original Peoples)
    22.5. White (including Middle Eastern)
23. Please select any additional categories that represent you. (Select all that apply.):
    23.1. American Indian or Alaska Native (including all Original Peoples of the Americas)
    23.2. Asian (including Indian subcontinent and Philippines)
    23.3. Black or African American (including Africa and Caribbean)
    23.4. Native Hawaiian or Other Pacific Islander (Original Peoples)
    23.5. White (including Middle Eastern)
    23.6. Not applicable

24. Please indicate your immigrant status (Select one): If No, then skip to end of survey.

    24.1. First-generation immigrant (you were born outside the US).

    24.2. Second-generation immigrant (one or both parents born outside the US).

    24.3. Not a first- or second-generation immigrant.

25. Please list your country or countries of origin: Open-ended response.

Appendix 3

Qualitative Inquiry Protocol

Focus Group Script

As each person walks in, welcome the student and ask him to her to print his or her name and school on the sign-in sheet, and pick up a nametag with an ID number. Ask each student to read the consent form, and sign it if they are comfortable. Answer questions about the consent form as needed. Ask students to have refreshments. As each person sits down, write their ID number on a room diagram to match where they are sitting, and take notes as needed by number.

After group assembles, say:

> Hello, and welcome to my focus group. Please start by reading and signing the consent form. I cannot start the group till after that is collected. Each of you has a number on your nametag and index card. Please help yourself to refreshments and we will get started. This is a focus group for my dissertation research. I'm studying online video creation by this year's class of first year students. I am running focus groups that are separated by gender. With your permission, I would like to audiotape this focus group discussion. I will keep your comments anonymous and mask your identity in any reporting. This is the reason for the numbered tags. I will transcribe the data from your focus group and store the digital recording on disk with password protection. I may use direct quotations from this focus group for my research; however, your name will not be used in any publication of this research. Do you have any questions before I begin

recording? If at any time you would like me to turn off the recorder, you may ask me to do so. You should also feel free to decline to answer any question.

Ask and answer any questions. Confirm verbal assent to audio recorder and start the recording device. Say:

> I will make every attempt to maintain all information collected in this study strictly confidential. Please do respect the privacy of the other participants in the group. I do want to mention that I cannot control the use of information by the participants in your group. Please state your ID number each time you speak so that I can understand the discussion later.

Core Questions: Wait for discussion after each one.

1. What is your experience with creating online videos?
2. What was easy about making online videos?
3. What was difficult or challenging about making online videos?

Follow-up questions – to be used as appropriate

1. How does concern about privacy affect video creation?
2. Why might you expect to see differences between men and women in video creation? Why might you not expect a difference?
3. How is making a video harder than other ways to use technology? How is it easier?
4. Do most students know which of their friends make videos? How do they know this?
5. How would making videos affect a person's social status?
6. What reasons might prevent a student from creating videos?

BIBLIOGRAPHY

Abramson, L. Y., Seligman, M. E., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology, 87*(1), 49-74.

Adadevoh, E. A. (2000). *An investigation of computer literacy among graduate students in selected urban universities: Implications for curriculum development* (Doctoral dissertation). Retrieved from ProQuest (Accession No. 3036302).

Adobe, Inc. (2010). *Adobe Press Releases.* Retrieved January 30, 2010, from http://www.adobe.com/aboutadobe/pressroom/pressreleases/prcategory.html#52

Ahuja, M. (2002). *Women in the information technology profession: A literature review, synthesis, and research agenda. European Journal of Information Systems, 11*, 20-34.

Apple, Inc. (2010). *Apple - press info - press release library*. (2010). Retrieved January 30, 2010, from http://www.apple.com/pr/library/

ApplicationsOnline LLC (2010). *Universal College App. (Main Form).* Retrieved April 10, 2010 from https://www.universalcollegeapp.com/Library/PrintPreview/Universal_College_Application.pdf

Baack, S. (1991). Attitudes toward computers: Views of older adults compared with those of young adults. *Journal of Research in Computer Education, 23*(3), 422-433.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.

Barker, L. J., & Aspray, W. (2006). The state of research on girls and IT. *Women and Information Technology: Research on Underrepresentation.* 3-54.

Beckwith, L., & Kissinger, C. (2006). *Tinkering and gender in end-user programmers' debugging. Proceedings of the SIGCHI conference on human factors in computing systems*. Canada; Montreal: ACM Press.

Belleau, B. D., & Summers, T. A. (1993). Comparison of selected computer attitude scales. *International Journal of Consumer Studies, 17*(3), 275-282.

Beyer, S., Rynes, K., Perrault, J., Hay, K., & Haller, S. (2003). Gender differences in computer science students. *Proceedings of the 34th SIGCSE Technical Symposium on Computer Science Education, (Reno, Nevada, USA, February 19 - 23, 2003). SIGCSE '03*. 49-53.

Beyer, S. (1994). *Effects of gender and depression on self-evaluations of performance on academic tasks.* Paper presented at the annual meeting of the American Psychological Society, Washington, DC, July 1994.

Biel, J. I., & Gatica-Perez, D. (2009). Wearing a YouTube hat: Directors, comedians, gurus, and user aggregated behavior. *Proceedings of the Seventeen ACM International Conference on Multimedia,* 833-836.

Bozionelos, N. (2004). Socio-economic background and computer use: The role of computer anxiety and computer experience in their relationship. *International Journal of Human-Computer Studies, 61*(5), 725-746.

BrightHub.com (2010). *FlipShare Software Review*. Retrieved February 1, 2010 from http://www.brighthub.com/multimedia/video/reviews/83824.aspx

Budden, C. B., Anthony, J. F., Budden, M. C., & Jones, M. A. (2007). Managing the evolution of a revolution: Marketing implications of Internet media usage among college students. *College Teaching Methods and Styles Journal, 3*(3), 5-10.

Bunz, U., Curry, C., & Voon, W. (2007). Perceived versus actual computer-email-web fluency. *Computers in Human Behavior, 23*(5), 2321-2344.

Bureau of Labor Statistics, U.S. Department of Labor. (2009). *Career guide to industries, 2010-11 edition, motion picture and video industries.* Retrieved February 20, 2010, from http://www.bls.gov/oco/cg/cgs038.htm

Busch, T. (1995). Gender differences in self-efficacy and attitudes toward computers. *Journal of Educational Computing Research, 12*(2)

Camp, T. (1997). The incredible shrinking pipeline. *Communications of the ACM, 40*(10), 103-110.

Campbell, K. (2000). Gender and educational technologies: Relational frameworks for learning design. *Journal of Educational Multimedia and Hypermedia, 9*(2), 131-149.

Cassidy, S., & Eachus, P. (2002). Developing the computer user self-efficacy (CUSE) scale: Investigating the relationship between computer self-efficacy, gender and experience with computers. *Journal of Educational Computing Research, 26*(2), 133-153.

CBS Interactive (2008). *Apple Quicktime 7.6.9: Editor's Review*. Retrieved February 1, 2011 from http://download.cnet.com/Apple-QuickTime/3000-2139_4-10002208.html

Charles, M., & Bradley, K. (2006). A matter of degrees: Female underrepresentation in computer science programs cross-nationally. *Women and Information Technology. Research on Underrepresentation.* MIT Press, Cambridge, Massachusetts, 183-203.

Christofides, E., Islam, T., & Desmarais, S. (2009). Gender stereotyping over instant messenger: The effects of gender and context. *Computers in Human Behavior, 25*(4), 897-901.

Clegg, S., & Trayhurn, D. (1999). Gender and computing: Not the same old problem. *British Educational Research Journal, 26*(1), 75-89.

Cohoon, J. M., & Aspray, W. (2006). *Women and information technology: Research on Underrepresentation.* Cambridge, MA. MIT Press.

Cohoon, J. M., & Aspray, W. (2006). A critical review of the research on women's participation in postsecondary computing education. In J.M. Cohoon and W. Aspray, (Eds.) *Women and Information Technology: Research on Underrepresentation,* Cambridge, MA: MIT Press, 137–180.

The College Board. (2006). College Board Standards for College Success: English & Language Arts, New York, NY: The College Board.

Colley, A. (2003). Gender differences in adolescents' perceptions of the best and worst aspects of computing at school. *Computers in Human Behavior, 19*(6), 673-682.

Colley, A., & Comber, C. (2003). Age and gender differences in computer use and attitudes among secondary school students: What has changed? *Educational Research, 45*(2), 155-165.

The Common Application (2010) *Application (student form) 2010.* Retrieved April 10, 2010 from https://www.commonapp.org/CommonApp/docs/downloadforms/CommonApp2010.pdf

Conrad, A. M., & Munro, D. (2008). Relationships between computer self-efficacy, technology, attitudes and anxiety: Development of the computer technology use scale (CTUS). *Journal of Educational Computing Research, 39*(1), 51-73.

Coolbaugh, A. M. (2004). *Assessing technology proficiency in higher education: An observation study to identify critical issues* (Doctoral dissertation). Retrieved from ProQuest (Accession No. 3146570).

Cooper, J. (2006). The digital divide: The special case of gender. *Journal of Computer Assisted Learning, 22*(5), 320-334.

Corl, F. M., Johnson, P. T., Rowell, M. R., & Fishman, E. K. (2008). Internet-based dissemination of educational video presentations: A primer in video podcasting. *American Journal of Roentgenology, 191*(1), W23.

Crandall, R. W., & Sidak, J. G. (2006). *Video games: Serious business for America's economy* White Paper: Entertainment Software Association. Retrieved April 10, 2010 from http://www.theesa.com/newsroom/seriousbusiness.pdf

Cusumano, M. (2008). Technology strategy and management: the puzzle of Apple. *Communications of the ACM, 51*(9), 22-24.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 1*3(3), 319-340.

Ellison, N., Steinfield, C. & Lampe, C. (2006). Spatially bounded online social networks and social capital: The role of Facebook. *Proceedings of the Annual Conference of the International Communication Association.* doi: 10.1.1.85.5541

Entwisle, D. R., & Astone, N. M. (1994). Some practical guidelines for measuring youth's Race/Ethnicity and socioeconomic status. *Child Development, 65*(6), 1521-1540.

Ferguson, E., & Cox, T. (1993). Exploratory factor analysis: A users' guide. *International Journal of Selection and Assessment, 1*(2), 84-94.

Fletcher, K. M. (2005). Evaluating an intervention to build online learning self-efficacy. (Doctoral dissertation). Retrieved from ProQuest (Accession No. 3169038).

Gannes, L. (2009). *YouTube changes everything: The online video revolution* in The Economics of Information, Communication and Entertainment, Television Goes Digital. (Gerbarg, Darcy Ed.), New York: Springer.

Garland, K. J., & Noyes, J. M. (2008). Computer attitude scales: How relevant today. *Computers in Human Behavior, 24*(2), 563-575.

Goldin, C., Katz, L. F., & Kuziemko, I. (2006). The Homecoming of American College Women: The Reversal of the College Gender Gap. *Journal of Economic Perspectives*. 20(4), 133-156.

Goldstein, J., & Puntambekar, S. (2004). The brink of change: Gender in technology-rich collaborative learning environments. *Journal of Science Education and Technology, 13*(4), 505-522.

Goodman, S., & Greene, M. (2003). *Teaching youth media: A critical guide to literacy, video production & social change.* New York: Teachers College Press.

Goodyear, P., Jones, C., Asensio, M., Hodgson, V., & Steeples, C. (2005). Networked learning in higher education: Students' expectations and experiences. *Higher Education, 50*(3), 473-508.

Google scholar search: Bandura 1997 self-efficacy exercise of control. (2010). Retrieved January 30, 2010, from http://scholar.google.com/scholar?hl=en&q=Bandura+1997+Self-Efficacy+Exercise+of+Control&as_sdt=2000&as_ylo=&as_vis=0

Hage, E. V. (2006). *E-book technology: The relationship between self-efficacy and usage levels across gender and age* (Doctoral dissertation). Retrieved from ProQuest (Accession No. 3205711).

Hargittai, E., & Walejko, G. (2008). The Participation Divide: Content creation and sharing in the digital age. *Information, Communication & Society*, 11(2), 239-256.

Harris, J. (2008). *The impact of gender socialization on women's learned technological helplessness and its andragogical implications* (Doctoral dissertation). Retrieved from ProQuest (Accession No. 3323326).

Hobbs, R., & Frost, R. (2003). Measuring the acquisition of media-literacy skills. *Reading Research Quarterly, 38*(3), pp. 330-355.

Hoeg, Rich (2006). "CamStudio - A Screencast Tutorial". NorthStarNerd.org blog (Retrieved 2/1/2011 from http://econtent.typepad.com/econtent/2006/12/camstudio_a_scr.html)

Holcomb, L. B., King, F. B., & Brown, S. W. (2004). Student traits and attributes contributing to success in online courses: Evaluation of university online courses. *The Journal of Interactive Online Learning, 2*(3), 1-17.

Igbaria, M., & Iivari, J. (1995). The effects of self-efficacy on computer usage. *Omega, 23*(6), 587-605.

Imhof, M., Vollmeyer, R., & Beierlein, C. (2007). Computer use and the gender gap: The issue of access, use, motivation, and performance. *Computers in Human Behavior, 23*(6), 2823-2837.

Johnson, D., & Johnson, M. (2004). Digital video. *Clinical Orthopaedics & Related Research, 421*, 17-24.

Johnston, K. M., & Bloom, K. (2010). Digging into YouTube videos: Using media literacy and participatory culture to promote cross-cultural understanding. *Journal of Media Literacy Education, 2*(2).

Joiner, R., Gavin, J., Duffield, J., Brosnan, M., Crook, C., Durndell, A., et al. (2005). Gender, Internet identification, and Internet anxiety: Correlates of Internet use. *CyberPsychology & Behavior,* 8(4), 371-378.

Kafai, Y. B. (2006). Playing and making games for learning: Instructionist and constructionist perspectives for game studies. *Games and Culture*, *1*(1), 36–40.

Kelly, M. G., & Haber, J. (2006). *Resources for student assessmen*t. Eugene, OR: International Society for Technology in Education (ISTE).

Ketelhut, D. J. (2006). *Do students with higher self-efficacy exhibit greater and more diverse scientific inquiry skills: An exploratory investigation in "river city", a multi-user virtual environment* (Doctoral dissertation). Retrieved from ProQuest (Accession No. 3221606).

Koch, S. C., Müller, S. M., & Sieverding, M. (2008). Women and computers: Effects of stereotype threat on attribution of failure. *Computers & Education, 51*(4), 1795-1803.

Kvasny, L. (2006). Let the sisters speak: Understanding information technology from the standpoint of the 'other'. *Database for Advances in Information Systems, 3*7(4), 13.

Lampe, C., Ellison, N., & Steinfield, C. (2006). A face (book) in the crowd: Social searching vs. social browsing. *Proceedings of the 2006 20th Anniversary Conference on Computer Supported Cooperative Work,* 167-170.

Larraga, L., & Coleman, D. (2007). Video podcasting is not as hard or as expensive as you think. *Proceedings of the 35th Annual ACM SIGUCCS Conference on User Services,* 206.

Liu, P. L., Ku, H. Y., Falvo, D., Charsky, D., Cheng, Y. C., & Evanbusk, E. (2004). The current state of attitude toward computer use for pre-service teachers. *Proceedings of Society for Information Technology and Teacher Education International Conference 2004,* 3469–3471.

Lukinbeal, C., Kennedy, C. B., Jones III, J. P., Finn, J., Woodward, K., Nelson, D., et al. (2007). Mediated geographies: Critical pedagogy and geographic education. *Yearbook of the Association of Pacific Coast Geographers, 69*, 31–44.

Mac Publishing, LLC. (2010). *iMovie 09 Review*. Retrieved February 1, 2011 from http://www.macworld.com/reviews/product/412943/review/imovie_09.html

Madden, M. (2007). Online video. *Pew Internet & American Life Project.* Retrieved March 27, 2010 from http://www.pewinternet.org/Reports/2007/Online-Video.aspx?r=1

Madden, M. (2009). The audience for online video-sharing sites shoots up. *Pew Internet & American Life Project.* Retrieved March 27, 2010 from http://www.pewinternet.org/Reports/2009/13--The-Audience-for-Online-VideoSharing-Sites-Shoots-Up.aspx?r=1

Margolis, J., Fisher, A., & Miller, F. (1999). Caring about connections: Gender and computing. *IEEE Technology and Society Magazine, 1*8(4), 13-20.

Mattingly, M. J., & Bianchi, S. M. (2003). Gender differences in the quantity and quality of free time: The U.S. experience. *Social Forces, 81*(3), pp. 999-1030.

McIlroy, D., Bunting, B., Tierney, K., & Gordon, M. (2001). The relation of gender and background experience to self-reported computing anxieties and cognitions. *Computers in Human Behavior, 17*(1), 21-33.

Mitra, A., Lenzmeier, S., Steffensmeier, T., Avon, R., Qu, N., & Hazen, M. (2000). Gender and computer use in an academic institution: Report from a longitudinal study. *Journal of Educational Computing Research, 23*(1), 67-84.

Molyneaux, H., O'Donnell, S., Gibson, K., & Singer, J. (2008). Exploring the gender divide on YouTube: An analysis of the creation and reception of vlogs. *American Communication Journal, 10*(1).

Moore, J. C., Stinson, L. L., & Welniak, E. J. (2000). Income measurement error in surveys: A review. *Journal of Official Statistics, 16*(4), 331-362.

Morris, S. A., Gullekson, N. L., Morse, B. J., & Popovich, P. M. (2009). Updating the attitudes toward computer usage scale using American undergraduate students. *Computers in Human Behavior, 25*(2), 535-543.

National Governors Association. (2010). *Common core state standards for English, Language Arts and Literacy in History / Social Studies & Science*. Retrieved March 30, 2010, from http://www.corestandards.org/Standards/K12/

Nelson Laird, T. F., & Kuh, G. D. (2005). Student experiences with information technology and their relationship to other aspects of student engagement. *Research in Higher Education, 46*(2), 211-233.

NTIA, E. (2010). *Digital nation: 21st century America's progress towards universal broadband internet access: An NTIA research preview*. Washington, DC: U.S. Department of Commerce.

Occupational Outlook Handbook. (2004). No. Entry for Data Entry and Information Processing Workers.). Washington, DC: United States Department of Labor, Bureau of Labor Statistics.

Pinkard, N. (2005). How the perceived Masculinity and/or femininity of software applications influences students' software preferences. *Journal of Educational Computing Research, 32*(1), 57-78.

Popovich, P. M., Hyde, K. R., Zakrajsek, T., & Blumer, C. (1987). The development of the attitudes toward computer usage scale. *Educational and Psychological Measurement, 47*(1), 261.

Popovich, P. M., Gullekson, N., Morris, S., & Morse, B. (2008). Comparing attitudes towards computer usage by undergraduates from 1986 to 2005. *Computers in Human Behavior, 24*(3), 986-992.

Pryor, J. H., Hurtado, S., Saenz, V. B., Santos, J. L. & Korn, W. S. (2007). *The American Freshman: Forty year trends, 1966-200*6. Los Angeles, CA: Higher Education Research Institute, Graduate School of Education & Information Studies, University of California, Los Angeles.

Pryor, J. H., & Hurtado, S. (2008). *The American Freshman: National norms for fall 200*8. Los Angeles, CA: Higher Education Research Institute, Graduate School of Education & Information Studies, University of California, Los Angeles.

Randall, F. A. (2001). *Factor analysis of online instruction self-efficacy using the Tennessee online instruction survey* (Doctoral dissertation). Retrieved from ProQuest (Accession No. 3039978).

Rideout, V. J., Foehr, U. G., & Roberts, D. F. (2010). *GENERATION M2: Media in the lives of 8- to 18-year-old*s. Menlo Park, California: Henry J. Kaiser Family Foundation.

Rosser, S. V. (1998). Group work in science, engineering, and mathematics: Consequences of ignoring gender and race. *College Teaching, 46*(3), 82-88.

Rozell, E. J., & Gardner III, W. L. (2000). Cognitive, motivation, and affective processes associated with computer-related performance: A path analysis. *Computers in Human Behavior, 16*(2), 199-222.

Shaft, T. M., Sharfman, M. P., & Wu, W. W. (2004). Reliability assessment of the attitude towards computers instrument (ATCI). *Computers in Human Behavior, 20*(5), 661-689.

Shannon, L. (2008). Information and communication technology literacy issues in higher education. *Information Systems Education Journal, 6*(23), 1-23.

Shannon, L. (2007). *A study of the millennial generation regarding information and communication technology literacy levels and comfort levels with digital life environments*. (Doctoral dissertation). Retrieved from ProQuest (Accession No. 3264364).

Sringam, C., Barnes, A., & Yates, G. C. R. (2001). Investigating distance adult students' learning outcomes through the integration of computer conferencing into distance education practices in Thailand. Paper Presented at the Open and Distance Learning Association of Australia 15th Biennial Forum, Sydney, 24-27th, September 2001.

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology, 69*(5), 797-811.

Strauss, W., & Howe, N. (1991). *Generations: The history of America's future, 1584-2069* (1st ed.). New York: Morrow.

TechMedia Systems (2011). *Casablanca Kron: The Professional Solution*. Retrieved February 1, 2011, from http://www.techmedia.com.au/TM_pages/products/casablanca/kron.html

Teo, T. (2008). Assessing the computer attitudes of students: An Asian perspective. *Computers in Human Behavior, 24*(4), 1634-1642.

Todman, J., & Day, K. (2006). Computer anxiety: The role of psychological gender. *Computers in Human Behavior, 22*(5), 856-869.

TechMediaNetworks.com (2011). *Digital Media Studio Review*. Retrieved February 1, 2011, from http://digital-media-studio-review.toptenreviews.com/

TechMediaNetworks.com (2011a). *DVD Burning Software Review*. Retrieved February 1, 2011, from http://dvd-burning-software.toptenreviews.com/

TechMediaNetworks.com (2011b). *Video Editing Software Review*. Retrieved February 1, 2011, from http://video-editing-software-review.toptenreviews.com/

Torkzadeh, G., & Van Dyke, T. P. (2002). Effects of training on Internet self-efficacy and computer user attitudes. *Computers in Human Behavior, 18*(5), 479-494.

Turkle, S. (1995). *Life on the screen: Identity in the age of the Interne*t. New York: Simon & Schuster.

United Nations Statisticians (1992). The Use Of Intelligent Statistical Support Systems: A Quasi-Experimental Design. *Emerging Information Technologies for Competitive Advantage and Economic Development: Proceedings of 1992 Information Resources Management Association International Conference,* 289.

Valentine, B., & Bernhisel, S. (2008). Teens and their technologies in high school and college: Implications for teaching and learning. *Journal of Academic Librarianship, 34*(6), 502-512.

Venkatesh, V., Morris, M. G., Gordon B. Davis, & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425-478.

Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly, 24*(1), 115-139.

Wajcman, J. (2000). Reflections on gender and technology studies: In what state is the art*? Social Studies of Science, 3*0(3), 447-464.

Wolf, J. (2011). A reexamination of gender-based attitudes toward group projects: Evidence from the Google online marketing challenge. *Computers in Human Behavior, 27*(2), 784-792.

Yang, C., Hsu, Y. C., & Tan, S. (2009). Predicting the determinants of users' intentions for using YouTube to share video: Moderating gender effects. *Cyberpsychology & Behavior: The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society*.

Zarrett, N., Malanchuk, O., Davis-Kean, P. E., & Eccles, J. (2006). Examining the gender gap in IT by race: Young adults' decisions to pursue an IT career. In J.M. Cohoon and W. Aspray, (Eds.) *Women and Information Technology: Research on Underrepresentation.* Cambridge, MA: MIT Press.

Zeldin, A. L., & Pajares, F. (2000). Against the odds: Self-efficacy beliefs of women in mathematical, scientific, and technological careers. *American Educational Research Journal, 37*(1), 215-246.

Ziff Davis, Inc. (2008). *Microsoft Movie Maker 6*. Retrieved February 1, 2011 from http://www.pcmag.com/article2/0,2817,2327560,00.asp

Ziff Davis, Inc. (2005). *Final Cut Studio*. Retrieved February 1, 2011, from http://www.pcmag.com/article2/0,2817,1830806,00.asp