RICE UNIVERSITY

Course Participation, Performance, and Completion by Adult Learners in a Massive Open Online Course (MOOC): Trait Complexes, Interest, and Non-Ability Determinants

by

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

Master of Arts

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HOUSTON, TEXAS
December 2016
ABSTRACT

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Investment theories of adult intellectual development posit that effort and attention toward knowledge acquisition and maintenance is directed by both ability (e.g., reasoning ability) and non-ability determinants (e.g., personality; Ackerman, 1996). The current study examines determinants of course engagement for adult learners registered in a Massive Open Online Course (MOOC). Learners’ survey responses were linked to objective course data. Outcomes examined were course activity participation, course performance, and course completion. A model is proposed and tested in which these outcomes are predicted by individual differences in trait complexes (i.e., constellation of personality and achievement goal orientations) and more proximally by interest, prior experiences, prior knowledge related to course content, and course affective engagement. I found that an intellectual/mastery trait complex was predictive of course affective engagement, which in turn was predictive of course outcomes. However, no such relationships were found for a traditional/avoidant trait complex.
ACKNOWLEDGEMENTS

I want to express my appreciation to my advisor Dr. Margaret E. Beier for her incredible support and expertise throughout this research project. I also want to thank my committee members, Dr. Michelle R. Hebl and Dr. David M. Lane, for their insightful feedback and guidance.

Furthermore, I want to express gratitude to the course instructors and data analysts who supported this research project, including Dr. Julie Fette, Dr. Cylette Willis, Rachel Schneider, Lisa Ross, and Nate Tunkuda. I would also like to thank the Beier lab members and undergraduate research assistants for their excellent work.

Finally, I would like to thank my family and friends for their constant support and encouragement: Maria Sanchez, Charles Sanchez, Johanna Algeo, Rosa Leslie Torres, David Torres, Danny Torres, Wiley Kisling, Rosemary Kisling, David Kisling, Jackie Gilberto, Carlos Moreno, Jessie Mae Hendrickson, and Zoey. This journey would not have been possible without all of you!
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Introduction

Adults choose to engage in lifelong learning for a variety of reasons, including curiosity, love of learning, or to gain new skills. Participation in learning activities has important implications in the intellectual functioning of adults across the lifespan including for knowledge obtainment (Ackerman, 1996) and for reducing cognitive decline (Schaie, 1994). A specific learning activity that has gained popularity among both adult learners and educators in recent years is Massive Open Online Courses (MOOCs). These types of courses are unique in that they are low-cost, usually have no prerequisites for registering, typically have thousands of registered learners, are taught in a wide range of topics, and can be accessed by internet connection all over the world. Learners can register for a variety of course topics, including arts, biology, business, chemistry, computer science, engineering, finance, humanities, mathematics, film, physics, social sciences, and statistics. The advantages of MOOCs are that learners can access the course at any time and can interact with other like-minded students in ways that may have otherwise not been possible (Brahimi & Sarirete, 2015).

In a MOOC, instructors typically provide learners with a course syllabus, learning objectives, and calendar. However, learners can choose how to engage in the course, which topics to focus on, and whether they want to complete the course. There are generally no negative consequences associated with dropping out of MOOCs. These features make MOOC environments a unique opportunity to study the determinants of engagement in learning activities outside of a research laboratory because learners are interacting with actual, relevant, real-world knowledge instead of with learning tasks that may be ambiguous or confusing.

The purpose of the current research study is to investigate determinants of adult intellectual development using investment theories of adult intelligence. Traditional views of intelligence generally focus only on the decline of fluid intelligence abilities (e.g., memory,
processing speed) with increasing age (e.g., Salthouse, 1996). However, investment theories of adult intellectual development also consider the influence of non-ability determinants (e.g., personality, interests) in knowledge obtainment (e.g., Ackerman, 1996; Cattell, 1987). A model of distal and proximal determinants of learner behavior and performance is proposed in Figure 1 and discussed in the sections that follow.
Figure 1. Proposed model showing significant relationships of trait complexes, interest, prior experiences, prior knowledge, and course affective engagement on course activities, course grade, and course completion.
Background

Investment Theories of Adult Intelligence

Research on adult intelligence generally provides a relatively pessimistic view of cognitive aging. Ackerman (2000) stated that “across some 80 years of research on adult intelligence, one important implication of the findings in the literature is that middle-aged adults are, on average, less intelligent than young adults” (p. 69). Previous research on adult intelligence has found that fluid intelligence (e.g., memory, processing speed) declines with increasing age (Cattell, 1943). On the other hand, crystallized intelligence (e.g., acquired knowledge) has been shown to stay more stable than fluid intelligence and can even increase through the lifespan (Beier & Ackerman, 2005).

Ackerman (1996) noted that declining fluid intelligence does not explain how adults are still successful in their day-to-day activities, work performance, and hobbies. Ackerman's (1996) PPIK theory is an adult intellectual development theory that stands for intelligence-as-process, personality, interests, and intelligence-as-knowledge. Ackerman introduced PPIK as a theory of adult intellectual development to expand the focus of intelligence from the measurement of general fluid intelligence to intelligence as acquired knowledge in everyday life. The process of engaging in learning is viewed as the investment that adults make towards certain domain knowledge areas as influenced by their ability and non-ability traits (e.g., personality, motivation, interests). What adults know is likely to impact their outcomes in a variety of settings, including school, work, and hobbies (Rolfhus & Ackerman, 1996). For example, prior domain knowledge is likely to facilitate acquiring new related knowledge (Rolfhus & Ackerman, 1996).
Typical-Maximal Performance

The current study focuses on non-ability trait determinants of course participation, performance, and completion. The MOOC environment is a setting upon which non-ability determinants most likely matter to course outcomes. This can be better understood by distinguishing between maximal performance environments and typical performance environments (Sackett, Zedeck, & Fogli, 1988). In a maximal performance environment, there is a time limit imposed on the person to perform the task, the person is aware that performance is being evaluated, and the person is presented with clear instructions to perform his or her best (Sackett et al., 1988). By contrast, typical performance environments do not impose time limits on the person performing the task, there is no evaluation of task completion, and there is no pressure to give a best performance (Sackett et al., 1988).

Performance in a MOOC can be considered to be closer to a typical performance environment compared to a maximal performance environment for three reasons. First, learners are assessed by applying and demonstrating the knowledge they obtain over time in the course. Learners can review lecture materials as often as they would like. Although there are weekly assignments due, learners can review them at their leisure and can engage with them at any time. Secondly, although learners are evaluated by a course grade at the end of the course, there are usually no serious consequences to not receiving a passing grade or dropping out of the course. Lastly, learners are not explicitly pressured to give their best performance in the course. Due to the flexible learning environment provided by MOOC courses, participation in course activities, or the effort made in the course, is likely to be determined by non-ability determinants (e.g., personality, interest).
The Trait-Complex Approach

Individual traits (e.g., personality) are often studied separately from other traits (e.g., motivation, interest, self-concept), with limited consideration of their overlap to one another (Ackerman, 1997). According to Ackerman (1997), personality research is likely to benefit from the consideration of the relationships among multiple personality traits because “human behavior is rarely, if ever, univocally determined by a single trait” (p. 173). Some researchers have attempted to propose theoretical frameworks that highlight the interplay of various individual traits. For example, Snow (1963) used an aptitude-complex approach to predict academic performance from the aggregation of abilities, attitudes, personality, and prior knowledge variables. This integrated approach to the study of individual traits suggested that outcomes, such as learning, were determined by “constellations of traits” that were either facilitative of learning or detrimental to learning (Ackerman, Kanfer, & Beier, 2013, p. 3). Ackerman and Heggestad (1997) further extended the aptitude-complex approach by labeling these constellation of traits as “trait complexes.” They used a meta-analytic approach to examine inter-relationships among intelligence, personality, and interest variables and found four trait complexes. These trait complexes were a social trait complex, a clerical/conventional trait complex, a science/math trait complex, and an intellectual/cultural trait complex. These trait complexes were posited to be formed during childhood and adolescence, and were thought to have an influence on academic orientations and domain knowledge formation because they “affect the direction and intensity of the investment of cognitive effort and ultimately lead to the differentiation between individuals in the breadth and depth of knowledge/expertise acquired during adulthood” (Ackerman & Beier, 2003, p. 4).

Previous studies have demonstrated evidence for how these trait complexes relate to learning and domain knowledge acquisition. For example, Ackerman, Bowen, Beier, and Kanfer
(2001) found that a social trait complex had a negative relationship to knowledge in academic domains whereas a science/math trait complex and a verbal/intellectual trait complex were positively associated with knowledge in academic domains. Furthermore, Ackerman and Beier (2006) found trait complexes accounted for incremental predictive validity in pretest and posttest knowledge (e.g., financial planning, debt management), after accounting for fluid intelligence and crystallized intelligence. The advantages of using a trait complex approach are that factors can be derived from numerous non-ability traits and that the study of domain knowledge and learning can be assessed from these smaller group of trait complexes (Ackerman & Beier, 2006). The current research study used a trait complex approach by examining the inter-relationships between personality and achievement goal orientations.

**Distal and Proximal Predictors and Mediators**

The current study examined distal predictors, distal mediators, and proximal mediators of course outcomes (see Figure 1). Distal predictors and distal mediators are considered to be traits that individuals possess from one situation to another. That is, these are traits that are considered to be relatively stable across situations. The current study considered trait complexes (i.e., constellation of traits consisting of personality and achievement goal orientations) to be distal predictors and interest, prior knowledge, and prior experiences to be distal mediators. By contrast, proximal mediators are more aligned with emotional states or behaviors that change depending on the situation. Proximal mediators are more directly related to the situation, which in the current study is learning in an online course. Therefore, the current study considers course affective engagement and participation in course activities to be proximal mediators in the relationship between trait complexes and course outcomes. These predictors and mediators will be further defined and discussed in the sections that follow.

**Distal Predictors: Personality and Achievement Goal Orientations**
Personality

Investment theories of adult intellectual development view personality traits as individual differences that direct how adults choose to apply their effort, time, and abilities in typical performance environments. A specific category of personality traits that measure a person’s tendency to engage with intellectual activities are called investment traits. Von Stumm and Ackerman (2013) defined investment traits as the “tendency to seek out, engage in, enjoy, and continuously pursue opportunities for effortful cognitive activity” (p. 854). In the literature, examples of investment traits include Need for Cognition and openness to experience.

An investment trait that has been studied in the intelligence-as-knowledge literature is Need for Cognition. This trait is defined as “the tendency for an individual to engage in and enjoy thinking” (Cacioppo & Petty, 1982, p. 116). An example item from Need for Cognition is “I prefer my life to be filled with puzzles that I must solve” (Cacioppo, Petty, & Kao, 1984, p. 307). One can infer that people who score high on Need for Cognition may be more likely to engage in activities that expose them to new challenges, ideas, and thoughts as part of their day-to-day typical performance. In a hypothesized pathway of current-event knowledge that included abilities and non-abilities, Hambrick, Meinz, and Oswald (2007) considered Need for Cognition to be a “distal measure of interest in intellectual activities” (p. 306). Need for Cognition predicted interest in nine different current-event knowledge areas, including entertainment, business/economy, and sports.

As part of the Big Five personality traits, openness to experience is a broad measure of a person’s tendency to be drawn to and appreciate new ideas and intellectual pursuits. Rolfhus and Ackerman (1996) found that openness to experience was positively correlated with academic knowledge scales across several different domains, including biological-social sciences, economics, math and physical sciences, technology, art, and humanities and social sciences.
They found that academic knowledge scales that related to verbal ability had stronger correlation with openness to experience. They explained that verbal ability is often most associated with crystallized intelligence. Conversely, knowledge scales that had low correlations with openness to experience were those scales that correlated more strongly with math and spatial abilities, which in turn were most closely correlated with fluid intelligence. Similarly, Rolfhus and Ackerman (1999) found a positive correlation between academic knowledge scales and openness to experience, with correlations that ranged from $r = .07$ (tool/shops knowledge) to $r = .33$ (art knowledge). Beier and Ackerman (2001) also found a significant and positive correlation between openness to experience and current-event knowledge ($r = .26$), which was a composite of knowledge in art/humanities, politics/economics, popular culture, and science/technology.

Need for Cognition and openness to experience have been shown to have positive relationships with knowledge. However, researchers have also found personality traits that may have a negative influence in knowledge acquisition. For example, Traditionalism is a personality trait that measures a person’s tendency toward a strict and rigid approach to life (Tellegen, 1982). Beier and Ackerman (2001) found a significant negative correlation between current-event knowledge and Traditionalism ($r = -.30$).

Overall, previous research studies have shown that investment traits are positively associated with knowledge obtainment. In a MOOC environment, learners have a choice about what course activities to engage with and how often to engage with them. Different tendencies towards enjoying learning and thinking are likely to influence learners’ engagement with course activities. Goff and Ackerman (1992) noted that other determinants of knowledge include motivational factors. The current study therefore also examines achievement goal orientations.
Achievement Goal Orientations

A type of learning orientation discussed in the literature that may be relevant in a typical performance environment are achievement goal orientations, which are “viewed as the purpose or cognitive-dynamic focus of competence-relevant behavior” (Elliot & McGregor, 2001, p. 501). Achievement goal orientations influence and guide behavior in achievement settings (Elliot & Murayama, 2008). In the mastery-performance dimension, mastery goals are about competency development in relation to self-improvement and performance goals are about demonstration of competency. There are four facets of achievement goal orientation that were examined in the current study: 1) mastery-approach (i.e., “focused on attaining task-based on intrapersonal competence”), 2) performance-approach (i.e., “focused on attaining normative competence”), 3) mastery-avoidance (i.e., “focused on avoiding task-based or intrapersonal incompetence”), and 4) performance-avoidance (i.e., “focused on avoiding normative incompetence”; Elliot & Murayama, 2008, p. 614).

Mastery-avoidance may seem counter-intuitive. Although there is motivation to learn, there is a fear of not learning enough. Elliot and McGregor (2001) described examples of mastery-avoidance, including “striving to avoid leaving a crossword puzzle incomplete, striving not to forget what one has learned, and striving not to lose one’s physical or intellectual capabilities” (p. 502). In a study of students, Elliot and McGregor (2001) found that a mastery-avoidance goal orientation was related to poor study behavior, worry, and emotionality.

Most of the research in the achievement literature is focused on children and college students (Remedios & Richardson, 2013). Although there have been over 1,000 studies regarding achievement goal orientations, most have not included older adult populations (Remedios & Richardson, 2013). This is a concern, especially considering the increasing popularity of lifelong learning activities for older adults (Remedios & Richardson, 2013). To address this gap,
Remedios and Richardson (2013) assessed the achievement goal orientations of older adult learners participating in distance education. Ages ranged from 19 to 85 years old. They found a significant positive correlation \( r = .37 \) between mastery-approach and expectations of finding the course interesting and enjoyable. There was a significant negative relationship \( r = -.11 \) between mastery-avoidance and expecting the course to be enjoyable. Women tended to have higher scores in mastery-avoidance and performance-avoidance than men. They did not find mean differences in achievement orientations by age. However, older students and women had higher expectations for the course to be enjoyable than younger students and men. In terms of classroom outcomes, mastery-avoidance orientation \( r = -.13 \) and performance-avoidance orientation \( r = -.16 \) were significantly negatively related to course performance. However, performance-approach orientation was significantly positively related to examination scores \( r = .15 \). There was no relationship found between mastery-approach orientation and examination scores. Remedios and Richardson (2013) showed that achievement goal orientations are relevant to understanding adult learners’ outcomes in online learning environments.

Eppler and Harju (1997) compared the adoption of achievement goals between non-traditional undergraduate college students (i.e., students who were first-time college students and who had a gap from high school graduation to college entry; \( Mage = 29.8 \) years, \( SD = 7.3 \)) and traditional undergraduate college students (i.e., students who were first-time college students and who had no gap from high school graduation to college entry; \( Mage = 19.2 \) years, \( SD = 1.3 \)). They found that the non-traditional undergraduate college students and the traditional undergraduate college students both tended to have higher achievement orientation than performance orientation. Learning goals for both non-traditional students and traditional students were positively correlated with GPA performance in college (around \( r = .30 \)) and with study
hours (around $r = .20$). Performance goals were not significantly correlated with GPA or studying behavior in nontraditional students or in traditional students. Their study showed that achievement goal orientations mattered to course behavior and performance.

Overall, previous research provided evidence for the role of achievement goal orientations in determining learners’ behaviors in class environments. A mastery-performance dimension explains how differences in purpose lead to differences in student goals and behaviors in achievement environments. Learners with a mastery orientation may be more interested in mastering new skills and learners with a performance orientation may be more interested in comparing and demonstrating their skills to others. The current study examined achievement goal orientations as a distal predictor to course engagement.

**Distal Mediators: Interests, Prior Experiences, and Prior Knowledge**

**Interests**

In addition to personality traits and achievement goal orientations, the current study also focused on the role of interest in supporting or hindering course performance. Interests are preferences in “work, school subjects, hobbies, [and] recreational activities” (Holland, 1973, p. 7). Holland (1959) measured vocational interest by asking respondents to indicate their attraction to certain work activities. He developed a hexagonal representation of vocational interests that includes: realistic interest (i.e., “enjoys activities requiring physical strength, aggressive action, motor coordination and skills”), investigative interest (i.e., “task-oriented people who generally prefer to ‘think through,’ rather than ‘act out,’ problems. They have marked needs to organize and understand the world”), artistic interest (i.e., “…prefer indirect relations with others. They prefer dealing with environmental problems through self-expression in artistic media”), social interest (“…prefer teaching or therapeutic roles”), enterprising interest (i.e., “…prefer to use their verbal skills in situations which provide opportunities for dominating, selling, or leading
others”), and conventional interest (i.e., “…prefer structured verbal and numerical activities, and subordinate roles. They achieve their goals through conformity”; Holland, 1959, pp. 36–37).

Interests are posited to direct cognitive effort made towards knowledge and skill acquisition. Rolfhus and Ackerman (1996) investigated the knowledge structures of 202 college students in thirty-two different academic knowledge domains. They found that artistic interest correlated with knowledge in art \((r = .39)\) and knowledge in music \((r = .47)\). Social interest was correlated with knowledge in psychology \((r = .32)\) and in sociology \((r = .37)\). Realistic interest was correlated with six out of eight knowledge scales in the math and physical sciences cluster, ranging from \(r = .32\) to \(r = .41\). Investigative interest was also correlated with 6 out of 8 knowledge scales in the math and physical sciences cluster, \(r = .32\) to \(r = .54\), and the bio-social science cluster, \(r = .45\) to \(r = .50\). Realistic interest and investigative interest were not correlated with knowledge scales in the art cluster or the humanities and social sciences cluster. In a different study, Rolfhus and Ackerman (1999) similarly found that realistic interest showed a small positive correlations with related academic knowledge scales, including chemistry \((r = .17)\) and electronics \((r = .17)\). Investigative interest was positively correlated with chemistry \((r = .31)\). Artistic interest had significant positive correlations, ranging from \(r = .22\) to \(r = .33\), with related humanities-focused knowledge tests (i.e., American Literature, Art, Geography, Music, and World Literature). They concluded from these studies that interest directed attention to knowledge acquisition in relevant content areas. Interest was hypothesized to have led students toward engaging in prior experiences that led to individualized knowledge structures (e.g., participation in extracurricular activities). However, these studies did not include assessment of college students’ prior experiences to test the hypothesis.
Outside of academic knowledge domains, Hambrick et al. (2007) examined individual differences in current-event knowledge, which reflects the day-to-day investment people make towards learning about the world around them (Beier & Ackerman, 2001). These day-to-day investments towards learning about the world may include prior experiences such as volunteering, reading news topics of interest, and listening to talk radio. Hambrick et al. (2007) posited that Need for Cognition would be a distal predictor for current events interest (e.g., business/economy, politics/government). Interest was then posited to predict participating in activities related to news exposure, which was measured by asking participants to self-report the amount of time spent reading newspapers or news magazines and listening to the news on the radio. They found that Need for Cognition did predict interest in current events, which in turn predicted current-event knowledge. They concluded that in the knowledge acquisition process, the role of non-ability traits should be considered.

Overall, previous research has shown that interest can influence the type of knowledge that is acquired. In addition, studies have focused on the role of interests in directing effort made toward certain activities, which may lead to individualized knowledge structures. The current study examined interest and prior experiences to understand how each influenced prior knowledge related to course topics and ultimately course engagement.

**Prior Experiences**

Investment theories of adult intelligence suggest that knowledge is gained by the prior experiences in which people choose to engage, which are directed by abilities, personality, interest, and other motivational traits. Assessing people’s prior experiences, outside of the requirements of school and work, allows researchers to examine the type of experiences that may promote lifelong intellectual development (e.g., knowledge and skill development or maintenance) and healthy aging (e.g., reduction in cognitive decline). Several measures have
been developed to assess prior experiences. For example, The Life Complexity Inventory assesses prior experiences by asking participants to report the amount of time they spent on certain activities each week (e.g., sports; Yu, Ryan, Schaie, Willis, & Kolanowski, 2009) and the Consumption and Activities Mail Survey, from the Health and Retirement Study, assesses activity participation across 33 different activities (e.g., watching television, reading papers and magazines; Sonnega et al., 2014).

Rather than assessing the effects of specific activity types on outcomes, some researchers categorize the activities into types. For example, Hultsch, Hammer, and Small (1993) asked participants to report the frequency of participation in 70 different activities. In their study, six activity categories emerged: 1) physical activities (e.g., jogging, walking), 2) social activities (e.g., visiting friends, attending a party), 3) self-maintenance activities (e.g., preparing meals, shopping), 4) passive information processing (e.g., listening to the radio, watching sports), 5) integrative information processing (e.g., playing a musical instrument), and 6) novel information processing (e.g., learning a language, playing bridge). The researchers further categorized these activities as either active life-style (i.e., participation in physical activities, integrative information processing, and novel information processing) or passive life-style (i.e., social activities, self-maintenance activities, and passive information processing). They found that active life-style was positively correlated with world knowledge (i.e., factual knowledge) with adults aged 65 to 74 years old ($r = .22$) and with adults aged 75 to 86 years old ($r = .62$). They also found that a passive life-style was not correlated with world knowledge ($r = .07$). The authors concluded that active life-style activities may be more beneficial for older adults than younger adults.
Prior experiences have been shown to be related to the type of knowledge that is acquired by adults. Choices that adults make about where to focus their attention and efforts can lead to differences in knowledge structures. In the current study, I asked participants to report frequency of activity participation in a variety of activities to assess the relationship between prior experiences, prior knowledge, and ultimately course outcomes.

**Prior Knowledge**

Acquired knowledge allows for acquisition of new knowledge. Hambrick (2003) found that participants that had more prior knowledge in basketball were better able to remember new knowledge about the events of a specific basketball game than participants that had less knowledge in basketball. For the current research study, these results suggested that learners with prior knowledge related to course content may be better able to retain new information taught by the instructors. In turn, these learners would better perform in graded class assignments and exams than learners with less prior knowledge.

Ackerman (2000) examined age, abilities, personality, and knowledge in 18 different knowledge domains (e.g. arts/humanities, physical sciences, business/law) in 228 adults ranging in age from 21 to 62 years old, all of whom had at least a Bachelor’s level education. Ackerman found a positive relationship between age and performance in 10 out of the 18 knowledge domains examined. There was no relationship found between age and knowledge in five of the domain knowledge scale and there was a negative relationship between three of the domain knowledge scales, all of which were in the sciences, domains that were most correlated with fluid intelligence. A composite of domain knowledge was found to be positively and significantly correlated with age ($r = .19$). Other studies with similar findings of the positive relationship between age and knowledge included health knowledge (Beier & Ackerman, 2003), current-event knowledge (Beier & Ackerman, 2001), and academic knowledge (e.g., Rolfhus &
The studies show that older adults are likely to accumulate knowledge over the lifespan.

Overall, previous research has shown that the day-to-day investment and effort made toward activities, as directed by interest, matter to knowledge obtainment. The current study examined the influence of distal mediators of interest, prior experiences, and prior knowledge related to course content on course engagement.

Proximal Mediators: Course Affective Engagement and Activity Participation

The current study examined learners’ course affective engagement and course activity participation, and their relationship to outcomes of course performance and course completion. Course affective engagement and course activity participation are considered to be mediators because they should be related to the predictors (i.e., trait complexes), distal mediators (i.e., interest, prior experiences, and prior knowledge), and outcomes (i.e., course grade and course completion). Course affective engagement is defined in the current study as the extent to which learners find the course to be enjoyable, interesting, and fun. Learners who find the course intrinsically rewarding are posited to participate in more course activities (e.g., viewing video lectures, contributing to the discussion forums). Keller and Blomann (2008) suggested that when a person is involved in an activity that fits person-level knowledge, skills, abilities, and personality, the person will engage more in that activity for its intrinsic reward. Flow theory states that flow is characterized by individuals becoming deeply involved in a task. Individuals in a state of flow lose track of time and engagement in the activity is found to be personally rewarding (Csikszentmihalyi, Abuhamdeh, & Nakamura, 2005). In an online course where there are relatively few consequences for not participating in the course, learners who are able to reach a flow state, or to have high course affective engagement, are posited to participate in the course
activities for its own intrinsic reward. These learners are also therefore posited to complete more of the course.

**MOOC Background**

MOOCs provide quality educational experiences essentially free of charge, and have the promise of democratizing education, which would level the playing field for opportunities for success in knowledge-based economies. However, they are not without criticism. Although they have the potential to provide quality education to millions who might otherwise not be able to afford it regardless of age, most learners in MOOCs tend to be young, educated, and employed (e.g., Breslow et al., 2013; Christensen et al., 2013). In addition, some critics point to their low completion rates, which typically fall between 2 to 10 percent of registered learners (Reich, 2014). For example, a MOOC on bioelectricity with 12,700 registered learners had a 97% dropout rate (Rivard, 2013).

Although this type of course attrition may be alarming, some researchers argue that dropout rates in MOOCs are not problematic given that not all MOOC registrants intend to complete the course (Reich, 2014). Instead, learners’ course intentions can include browsing (i.e., reviewing the course materials but not completing the assignments), auditing (i.e., completing some of the course assignments), or completing the course (i.e., completing required course assignments; Reich, 2014). In a MOOC, not completing the course comes with little negative consequences, as compared to traditional classrooms where lost tuition money and delayed graduation are real possibilities.

Reasons for dropping out of a MOOC are likely as varied a reasons for enrolling in the first place. Christensen et al. (2013) found that motivation for enrolling in a course depended on the course type. For humanities courses (e.g., poetry, music), for instance, 74.6% of learners said they enrolled because of “curiosity, just for fun,” 11.9% to “gain specific skills to do my job
better,” 7% to “gain knowledge to get my degree”, and 3.6% to “gain specific skills to get a new job.” By contrast, for learners in science, healthcare, and math courses, 48.7% took the course for “curiosity, just for fun,” 39% to “gain specific skills to do my job better,” 16% to “gain knowledge to get my degree,” and 12.8% to “gain specific skills to get a new job” (p. 11).

DeBoer, Ho, Stump, and Breslow (2014) argued that care must be taken in the interpretation of learners’ course behavior in a MOOC because terms used in the traditional classroom (e.g., enrollment, participation, curriculum, and success) do not necessarily have the same meaning in MOOCs. This is due to the unique needs, motivation, and intentions of learners who register in a MOOC. In a MOOC, enrollment can occur many weeks before the course starts and can continue after the course ends. By contrast, a traditional classroom has strict deadlines for registration and for dropping the course without consequence. Learner participation in a MOOC is also different from the traditional classroom. Lack of participation in certain course activities may not necessarily imply that the learner has disengaged or quit the MOOC, as may be the case in the traditional classroom. Rather, people may disengage and then reengage in MOOCs without consequence. Furthermore, the curriculum in which a learner engages in a MOOC may or may not follow the order specified in a course syllabus, as compared to the traditional classroom where the syllabus has topical categories for discussion and interaction materials that are typically organized in some linear fashion where knowledge builds by topic. Learner behavior in a MOOC can follow multiple pathways that are not necessarily wrong or unsuccessful because there is no one right way to proceed. DeBoer et al. (2014) states that focusing primarily on the MOOC dropout rate and how many registrants completed the MOOC successfully does not fully explain learners’ intention of engagement with the MOOC. Success in
a MOOC needs to be linked to what is important for the learners’ individual goals rather than traditional standards of educational success.

Overall, MOOCs provide an environment in which learners have flexibility in the manner in which they engage in the course. The course in the current study was a five-week MOOC that focused on interpersonal interactions of American culture with four different regions around the world. Further background information on the MOOC is provided in Appendix B. The course outcomes examined in the current study include course participation, completion, and performance. These are measures of learners’ course behaviors and effort and do not necessarily assess learners’ success in the course.

**Hypotheses**

The proposed model was based on investment theories of adult intellectual development (Cattell, 1971; Ackerman, 1996). Specifically, I proposed that individual differences in trait complexes (i.e., constellations of personality and achievement goal orientations), interest, prior experiences, and prior knowledge related to course content would predict course affective engagement and effort made toward course participation and ultimately course outcomes.

The proposed model consists of 9 variables, as shown in Figure 1. The two distal predictors are an intellectual/mastery trait complex and a traditional/avoidance trait complex. The course outcome variables are course grade and course completion. The remaining variables in the model include both distal and proximal mediators. The distal mediators are interest (i.e., interest related to course content, such as culture and history), intellectually active prior experiences (i.e., participating in activities such as reading non-fiction books or creative writing), and prior knowledge (i.e., current-event knowledge in course-related topics, such as art/humanities and politics/economics). More proximal mediators are course affective
engagement (e.g., enjoying the course) and participation in course activities (e.g., posting in the discussion forum, viewing video lectures).

I hypothesized that an intellectual/mastery trait complex would positively influence course-related interest. Prior research has shown that investment traits, such as Need for Cognition and mastery goal orientation, to be predictive of being drawn to effortful cognitive pursuits. Prior research has also demonstrated that certain trait complexes may also hinder intellectual pursuits. In the current study, I hypothesized that a traditional/avoidance trait complex, which is characterized as being conservative, with a mastery and performance avoidance achievement goal orientation, would negatively influence course-related interest.

I also hypothesized that interest would predict investment made towards intellectually active prior experiences. Interest has been shown to direct effort towards certain activities (e.g., Rolfhus & Ackerman, 1996; Rolfhus & Ackerman, 1999). Participants with an interest in course-related topics are posited to also engage in intellectually active prior experiences (e.g., learning a new language). These experiences would then influence the course-related knowledge structures formed. Prior research has shown that when a person’s knowledge, skills, and abilities matches the task, a state of flow is achieved. Therefore, I hypothesized that knowledge influences the extent to which participants feel engaged in the course. That is, participants with more prior knowledge in related course contents would feel more motivated and engaged than participants with less prior knowledge. Participants who are more engaged in the course would participate in more course activities, leading to better course grades and extent of course completed.

**Pilot Study**

The current study required an assessment of people’s interest in and prior knowledge of course-related topics (e.g., politics, culture, arts). Therefore, new measures were developed for the current study. More specifically, measures were developed to assess participants’ interest in
and knowledge about the world around them, including current news interest, arts/humanities news interest, politics/economics news interest, arts/humanities knowledge, and politics/economics knowledge. A pilot study was conducted in order to assess the reliability and validity of the interest and knowledge measures.

I focused on developing measures of participants’ interest toward course-related topics (e.g., culture, art, globalization, capitalism). Specifically, measures of interest in arts/humanities news and politics/economics news and a more general current news interest were developed for this study. Measures of prior knowledge in arts/humanities and politics/economics were also developed for this study. Items were created from current events in the news occurring between 2010 and 2015. Each item had one correct answer out of four answer choices. Research assistants evaluated items for inclusion, inclusion with revision, or exclusion of the item for the current-event knowledge battery.

I expected that higher interest would be associated with more knowledge in corresponding domains. Therefore, I predicted that arts/humanities knowledge would be positively correlated with artistic interest and that politics/economics knowledge would be positively correlated with realistic and enterprising interests.

Participants

Participants in the pilot study were 100 adults (49% women) from Amazon Mechanical Turk, ranging in age from 22 to 68 years old ($M_{age} = 34.83$ years, $SD = 9.67$ years).

Measures

The items that make up each measure developed for the current study are included in Appendix A and they are further discussed below.

Interest. The measures developed for the current study were validated against a 48-item interest measure (Armstrong, Allison, & Rounds, 2008). There were six interest categories
consisting of eight activities each. Responses were on a 5-point Likert scale, with “1 = strongly dislike” and “5 = strongly like.” Participants were asked to “Read each activity carefully and decide how you would feel about doing each type of activity.” Interest measures included realistic (e.g., “assemble electronic parts”), investigative (e.g., “do research on plants or animals”), artistic (e.g., “design artwork for magazines”), social (e.g., “help people with family-related problems”), enterprising (e.g., “manager the operations of a hotel”), and conventional (e.g., “maintain employee records”) interests. Interest composites were formed by summing across responses.

**Arts/humanities and politics/economics knowledge.** Forty-five items from news relating to arts/humanities and forty-five items from news relating to politics/economics were included in the pilot study. Participants’ instructions for the arts/humanities and politics/economics measures were: “In the following section, you will see a series of questions about current event that are generally prevalent to a U.S. population. Each question contains four answer choices. Please select the response that you believe correctly answer the question. If you do not know the answer, please select your best guess.” A sample item from the arts/humanities knowledge measure (α = .81) was “Which 2009 best-selling novel about life in the American South during the 1960s was made into a movie in 2011?” The response choices displayed to participants were “The Help,” “Water for Elephants,” “The Secret Life of Bees,” and “The Book Thief.” A sample item from the politics/economics knowledge measure (α = .90) was “What city filed for bankruptcy on July 19, 2013, becoming the largest city in the history of the United States to do so?” The response choices displayed to participants were “Stockton, California,” “Birmingham, Alabama,” “Gould, Arkansas,” and “Detroit, Michigan.” An arts/humanities
knowledge composite and a politics/economics knowledge composite were formed by summing across correct responses.

**Current news interest.** Current news interest was a 2-item measure ($\alpha = .84$). A sample item included “In general, how interested are you in following current events?” Responses were on a 5-point Likert scale, with “1 = very uninterested” and “5 = very interested.” A current news interest composite was formed by summing across responses, such that higher scores represented higher levels of interest.

**Arts/humanities news interest.** Arts/humanities news interest was a 7-item scale ($\alpha = .95$). A sample item included “News headlines about cultural topics like literature, music, and art tend to capture my attention.” Responses were on a 5-point Likert scale, with “1 = not at all like me” and “5 = very much like me.” An arts/humanities news interest composite was formed by summing across responses, such that higher scores represented higher levels of interest.

**Politics/economics news interest.** Politics/economics news interest was a 7-item scale ($\alpha = .97$). A sample item included “News headlines about political topics like business, economics, and government tend to capture my attention.” Responses were on a 5-point Likert scale, with “1 = not at all like me” and “5 = very much like me.” A politics/economics news interest composite was formed by summing across responses, such that higher scores represented higher levels of interest.

**Results and Discussion**

Descriptive statistics and inter-correlations of knowledge and interest measures are shown in Table 1. Arts/humanities knowledge was positively correlated with investigative ($r = .30, p < .01$) and artistic interest ($r = .26, p < .01$). Politics/economics knowledge was positively correlated with age ($r = .24, p < .05$). The relationship between arts/humanities knowledge and artistic interest matched expectations. Participants interested in news related to the arts had more
related domain knowledge. Although politics/economics knowledge was not related to realistic or enterprising interests, it was positively associated with age, demonstrating the advantage that older adults may have over younger adults in certain knowledge domains.

Current news interest was positively correlated with investigate interest \((r = .26, p < .01)\), and arts/humanities knowledge \((r = .39, p < .01)\) and politics/economics knowledge \((r = .49, p < .01)\). Arts/humanities news interest was significantly positively correlated with investigate interest \((r = .38, p < .01)\), artistic interest \((r = .60, p < .01)\), and social interest \((r = .30, p < .01)\). Politics/economics news interest was significantly positively correlated with realistic interest \((r = .24, p < .05)\), investigative interest \((r = .26, p < .01)\), and social interest \((r = .20, p < .01)\). These results met expectations. Although interest in news relating to arts/humanities and politics/economics were both positively associated with investigative interest and social interest, there were key differences. Interest in news relating to politics/economics was positively associated with more practical interest (realistic). By contrast, interest in news relating to arts/humanities was positively associated with creative expression interest (artistic). Overall, the pilot study showed evidence for construct validity and internal reliability of the measures developed for the current study.
Table 1. Inter-correlations Between Measures of Interest and Knowledge (Pilot Study)

<table>
<thead>
<tr>
<th>Measure</th>
<th>M</th>
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<tr>
<td>1. Realistic</td>
<td>20.24</td>
<td>6.32</td>
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<td>2. Investigative</td>
<td>27.69</td>
<td>7.77</td>
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<tr>
<td>3. Artistic</td>
<td>23.48</td>
<td>8.31</td>
<td>.16</td>
<td>.35**</td>
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<td>4. Social</td>
<td>21.81</td>
<td>7.08</td>
<td>.26*</td>
<td>.39**</td>
<td>.53**</td>
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<tr>
<td>5. Enterprising</td>
<td>19.34</td>
<td>6.53</td>
<td>.28**</td>
<td>.11</td>
<td>.41**</td>
<td>.57**</td>
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<tr>
<td>6. Conventional</td>
<td>26.11</td>
<td>7.65</td>
<td>.44**</td>
<td>-.06</td>
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<td>.29**</td>
<td>.27**</td>
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<tr>
<td>7. Arts/hum. knowledge</td>
<td>25.43</td>
<td>6.82</td>
<td>-.05</td>
<td>.30**</td>
<td>.26**</td>
<td>.14</td>
<td>-.00</td>
<td>-.04</td>
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<tr>
<td>8. Poli./econ. knowledge</td>
<td>31.44</td>
<td>8.13</td>
<td>.00</td>
<td>.18</td>
<td>.19</td>
<td>.04</td>
<td>-.13</td>
<td>-.07</td>
<td>.71**</td>
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<tr>
<td>9. Current news interest</td>
<td>7.34</td>
<td>1.98</td>
<td>.07</td>
<td>.26**</td>
<td>.17</td>
<td>.16</td>
<td>.04</td>
<td>-.03</td>
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<td>.49**</td>
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<tr>
<td>10. Arts/hum. news interest</td>
<td>38.12</td>
<td>11.54</td>
<td>.11</td>
<td>.38**</td>
<td>.60**</td>
<td>.30**</td>
<td>.11</td>
<td>.07</td>
<td>.42**</td>
<td>.32**</td>
<td>.32**</td>
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<tr>
<td>11. Poli./econ. news interest</td>
<td>39.79</td>
<td>12.34</td>
<td>.24*</td>
<td>.26**</td>
<td>.12</td>
<td>.20*</td>
<td>.19</td>
<td>.18</td>
<td>.25*</td>
<td>.43**</td>
<td>.78**</td>
<td>.26*</td>
<td></td>
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<tr>
<td>12. Age</td>
<td>34.83</td>
<td>9.67</td>
<td>-.18</td>
<td>-.07</td>
<td>-.02</td>
<td>-.11</td>
<td>-.16</td>
<td>-.19</td>
<td>-.03</td>
<td>.24*</td>
<td>.12</td>
<td>.05</td>
<td>.11</td>
<td>1.00</td>
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</tr>
<tr>
<td>13. Gender</td>
<td>1.51</td>
<td>.50</td>
<td>.20*</td>
<td>-.07</td>
<td>-.09</td>
<td>-.13</td>
<td>.19</td>
<td>.04</td>
<td>-.07</td>
<td>.00</td>
<td>-.10</td>
<td>-.23*</td>
<td>-.06</td>
<td>-.16</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note: N = 100. Internal consistency estimates (α, Cronbach, 1951) appear on the diagonal. Gender coded 1 = Female, 2 = Male
* p < .05, **p < .01 level
Current Study

Procedures
The MOOC in the current study had a total of 4,253 registered learners. The official course start date was 10/8/2015 and course end date was 11/12/2015. However, the course was accessible to learners before the course started and after the course ended. Data provided by the course provider spanned from 9/30/15 to 12/31/15. I used an established definition to identify MOOC starters as those learners who had played at least one video lecture, took at least one quiz, contributed to at least one discussion forum, or viewed at least one Further Exploration web page (e.g., see Grainger, 2013). Learners who did not participate in at least one of the activities listed above were not considered to be MOOC starters and were therefore ineligible to participate in the study. Out of the 4,253 course registrants, 25% were identified as MOOC starters ($n = 1,046$) by the end of the course. MOOC starters needed to be recruited as study participants while the course was still in session. Therefore, three weeks after the start of the course, 522 MOOC starters were identified and were sent an invitation to participate in the current study. Survey invitations, which included the consent form, were sent via email. There were a total of 108 MOOC starters who completed the survey, resulting in a 21% response rate. Learners who completed the survey received a $10 electronic gift card as compensation.

Participants
There were a total of 108 participants in the current study ($Mage = 44.2$, $SD = 17.3$; 67% women). This was a highly educated sample, with 81% having earned a bachelor’s degree or higher and 19% having earned at least a high school degree. Compared to typical MOOC participants, current study participants were on average older and had similar educational backgrounds. Participants’ work status included employed (58%), not employed (22%), and retired (20%) categories. The majority of participants were not currently students (80%). Race
data was not available for all participants from the MOOC course provider Coursera as response to the item was optional and not all participants completed demographic information. From the 25 participants whose race was available, 68% were white or Caucasian.

**Measures**

**Predictors.**

**Openness to experience.** Participants completed a 10-item IPIP (International Personality Item Pool; Goldberg et al., 2006) representation of Openness to Experience ($\alpha = .79$), which measured the tendency to be receptive towards new and challenging information and ideas. Responses were on a 5-point scale, where “1 = very inaccurate” and “5 = very accurate.” Sample items included “I believe in the importance of art.” and “I carry the conversation to a higher level.”

**Traditionalism.** Participants completed an 8-item IPIP (Goldberg et al., 2006) representation of Traditionalism ($\alpha = .86$), which measured the tendency for conservative views on religion, politics, and behavior. Responses were on a 5-point scale, where “1 = very inaccurate” and “5 = very accurate.” Sample items included “I believe in one true religion.” and “I tend to vote for conservative political candidates.”

**Need for Cognition.** Participants completed an 18-item scale called Need for Cognition ($\alpha = .89$), which measured “an individual’s tendency to engage in and enjoy effortful cognitive endeavors” (Cacioppo et al., 1984, p. 306). Responses were on a 5-point scale, where “1 = very inaccurate” and “5 = very accurate.” Sample items included “I would prefer complex to simple problems.” and “I like to have the responsibility of handling a situation that requires a lot of thinking.”

**Achievement goal orientations.** Participants completed a 12-item scale from Elliot and McGregor (2001) that measures the four types of achievement goal orientations. Each goal
orientation was measured by three items, which were mastery-approach ($\alpha = .83$), mastery-avoidance ($\alpha = .86$), performance-approach ($\alpha = .85$), and performance-avoidance ($\alpha = .73$) (Elliot & McGregor, 2001). A sample item is provided for each of the four subscales: 1) “It is important to me to do better than other students” (performance-approach), 2) “I worry that I may not learn all that I possibly could in this course” (mastery-avoidance), 3) “I want to learn as much as possible from this course” (mastery-approach), and 4) “My goal in this course is to avoid performing poorly” (performance-avoidance). Responses were on a 7-point scale, where “1 = very untrue of me” and “7 = very true of me.”

**Distal Mediators.**

**Prior experiences.** Participants were asked how often they participated in 18 activities. The majority of the activities chosen were previously used in Hultsch et al. (1993), who categorized daily activities as integrative information processing activities (e.g., creative writing or painting/drawing), novel information processing activities (e.g., completing crossword puzzle or played word games), physical activities (e.g., making things, such as furniture), social activities (e.g., visiting friends), self-maintenance activities (e.g., shopping), and passive information processing (e.g., listening to music on radio). Other activities chosen were previously used in a previous unpublished study (Torres, Beier, & Ackerman, 2015). Participants responded to a 5-point scale, where “1 = hardly every” and “5 = almost always.”

Participants were also asked how often they participated in six Internet activities on an average day, outside of their requirements for school or work. Participants responded to a 5-point scale, where “1 = hardly ever” and “5 = almost always.” The Internet activity categories included entertainment, information, shopping and/or banking, news information, communication, and
social network sites. Activities were generated by reviewing common online activities (e.g., Fitzgerald, 2014; InfoPlease, 2007; Pew Research Center, 2015).

**Course interest.** Participants were asked to rate how interested they were in certain course topics, including African, American, Chinese, French, and Mexican culture and history, democracy and modernity, globalization and capitalism, racism and immigration, and cultural and intellectual life ($\alpha = .96$). Responses were on a 5-point scale, where “1 = very uninterested” and “5 = very interested.”

**Current news interest.** Participants responded to two items that measured current news interest ($\alpha = .84$). The first item was “In general, how interested are you in following current events?” Responses were on a 5-point scale, where “1 = very uninterested” and “5 = very interested.” The second item was “In general, how important is it for you to stay up-to-date on current events?” Responses were on a 5-point scale, were “1 = very unimportant” and “5 = very important.”

**Arts/humanities news interest.** Participants completed a 7-item scale that measured interest in following current events in the arts/humanities ($\alpha = .94$). An example of an item was “News headlines about cultural topics like literature, music, and art tend to capture my attention.” Responses were on a 5-point scale, where “1 = not at all like me” and “5 = very much like me.”

**Politics/economics news interest.** Participants completed a 7-item scale that measured interest in following current events in politics/economics ($\alpha = .95$). An example of an item was “I like to discuss news about political topics like business, economics, and government with family and/or friends.” Responses were on a 5-point scale, where “1 = Not at all like me” and “5 = Very much like me.”
**Arts/humanities and politics/economics knowledge.** A final set of 20 items from arts/humanities ($\alpha = .76$) and politics/economics ($\alpha = .81$) were chosen for use in the current study. Item reduction from the original 45 items in arts/humanities and 45 items in politics/economics was completed by using item difficulty and item discrimination from results in the pilot study.

**Proximal Mediators.**

**Course affective engagement.** Participants responded to an 11-item scale to assess course affective engagement ($\alpha = .92$). Items were edited from the original scale found in (Keller & Blomann, 2008). The items focused on participants’ affective engagement in the course, including concentration, enjoyment, involvement, and motivation to engage in the course. Sample items included “My concentration is completely focused in this course.” and “I am having fun in this course.” Responses were on a 5-point Likert scale, where “1 = very inaccurate” and “5 = very accurate.”

**Course activities.** Individual-level behavioral course data was collected and provided by MOOC service provider Coursera. The course contained 54 video lectures available for play and 39 Further Exploration web pages containing extra course resources (e.g., readings). A variable called course activities was created by summing the number of video lectures played and Further Exploration pages viewed, out of a possible 93 course activities.

**Course Outcomes.**

**Course grade.** Course grades ranged from 0% to 100%. There were a total of five available quizzes for a possible total of 33 points. Participants were also required to contribute to the discussion forums. There were a total of 13 required discussion forums for a possible total of 13 points. Course grade was computed from 60% of earned quiz points and 40% of earned
discussion forum points. Participants with a course grade of 75% or higher earned a certificate of completion.

Course completion. There were a total of six course modules (i.e., Introduction, Africa, China, France, Mexico, Reflection) available that could be accessed in no particular order, making course attrition difficult to define. Therefore, the extent of course completion was computed by summing the number of course modules participated in (i.e., module participation was indicated if participant completed at least one quiz, played at least one video lecture, or posted in at least one discussion forum). The course completion variable ranged from “1 = participation in one module” to “6 = participation in six modules.”

Results

Personality Inter-correlations and Derived Trait Complexes

The means, standard deviations, and inter-correlations of the personality traits and achievement goal orientations are shown in Table 2. An exploratory factor analysis with principal axis factoring and Varimax rotation revealed two factors explaining 55.2% of the variance. The factors were a traditional/avoidance trait complex (i.e., performance avoidance, mastery avoidance, performance approach, and traditionalism) and an intellectual/mastery trait complex (i.e., Need for Cognition, openness to experience, and mastery approach).

Traditionalism was included in the traditional/avoidance trait complex factor because its factor loading (.29) was very near to the suggested .3 factor loading threshold for inclusion and because I was interesting in including traits that were positively correlated with the underlying factor. An intellectual/mastery approach trait complex and the traditional/performance/avoidance trait complex were created by averaging across standardized personality and achievement goal orientations measures.
The intellectual/mastery trait complex consisted of a constellation of traits that emphasized a learning and personal-development orientation. The traditional/avoidance trait complex consisted of a constellation of traits that emphasized a performance orientation, conservativeness, and motivation to avoid not doing as well as one hopes.
Table 2. Inter-Correlations and Derived Trait Complexes of Personality and Achievement Goal Orientations

<table>
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<tr>
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<th>M</th>
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<td>mastery</td>
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<td>1.57</td>
<td>.52**</td>
<td>(.86)</td>
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<td>.20*</td>
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<td>.32</td>
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</table>

|                      |      |      |       |       |       |       |       |       |       | Eigenvalue       |          |          |
|                      |      |      |       |       |       |       |       |       |       | 2.08            | 1.86      |          |
|                      |      |      |       |       |       |       |       |       |       | % of Total       |          |          |
|                      |      |      |       |       |       |       |       |       |       | Variance         | 29.66%    | 26.58%   |
|                      |      |      |       |       |       |       |       |       |       | Total Variance   | 56.24%    |          |

Note: N = 108. Internal consistency estimates (α, Cronbach, 1951) appear on the diagonal. Scores for Traditionalism, Need for Cognition, and Openness to experience were on a 5-point Likert scale, where “1 = very inaccurate” and “5 = very accurate.” Scores for Performance avoidance, mastery avoidance, performance approach, and mastery approach were on a 7-point Likert scale, where “1 = very untrue of me” and “7 = very true of me”. Intellectual/mastery and traditional/avoidance trait complexes were derived from factor analysis of personality and goal orientation measures.

* p < .05, **p < .01 level
Interest, Prior Knowledge, and Prior Experiences Composites

Interest. An interest composite was created by summing across standardized measures of course interest, current news interest, arts/humanities interest, and politics/economics interest. Higher scores represented higher interest in course-related topics.

Knowledge. A knowledge composite was created by summing across the arts/humanities and politics/economics knowledge assessments scores. Higher scores represented more prior knowledge in course-related topics.

Prior experiences. An exploratory factor analysis with principal axis factoring and Varimax rotation was conducted on the general and internet activities. The scree plot and an eigenvalue cut-off of 1.0 suggested a total of seven factors explaining 62.1% of the variance. Two activities with factor loadings less than .3 were removed from the analysis. These activities were: 1) exercising or recreational activities, and 2) watching or listening to sports events. The seven factors, as shown in Table 2, were named communication/entertainment activities (i.e., social network sites, talking or messaging on the phone, communication, entertainment, listening to music, watching or listening to talk shows), self-maintenance activities (i.e., online shopping and/or banking, paying bills, shopping), home maintenance activities (i.e., cleaning home, making things, repairing electrical or mechanical devices), information seeking activities (i.e., information search, news information, reading non-fiction books), novel/integrative learning activities (i.e., creative writing or painting, playing or learning a musical instrument, learning a new language), social activities (i.e., visiting friends, helping friends or family), and puzzles/games activities (i.e., completing crossword puzzles or playing word game, watching trivia game shows). Next an intellectually active prior experiences composite and a passive prior experiences composite were created by summing across responses, as guided by the categorization used in Hultsch et al. (1993). The intellectually active activities composite
included information seeking activities, novel/integrative learning activities, and puzzles/games activities and the passive activities composite included self-maintenance activities, home maintenance activities, and social activities.
Table 3. Varimax Rotated Factor Loadings Based on Principal Axis Factoring of Prior Experiences

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<tr>
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<td>2. Phone</td>
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<td>3. Communication</td>
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<td>4. Entertainment</td>
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<td>5. Listening to music</td>
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<td>.13</td>
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<td>6. Talk shows</td>
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<td>7. Paying bills</td>
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<td>8. Online shop/bank</td>
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<td>-.18</td>
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<td>9. Shopping</td>
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<td>-.06</td>
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<tr>
<td>10. Cleaning home</td>
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<td>-.04</td>
<td>.04</td>
<td>-.05</td>
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<td>11. Making things</td>
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<td>.21</td>
<td>.14</td>
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<td>12. Repairs</td>
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<td>13. Search info.</td>
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<td>14. News info.</td>
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<td>15. Non-fiction books</td>
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<td>.09</td>
<td>-.09</td>
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<td>.69</td>
<td>.07</td>
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<td>20. Helping others</td>
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<td>-.03</td>
<td>.13</td>
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<td>.64</td>
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<td>21. Puzzles, games</td>
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<td>.09</td>
<td>.09</td>
<td>-.04</td>
<td>.02</td>
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<td>22. Trivia</td>
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<td>-.00</td>
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<td>Eigenvalue</td>
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<tr>
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<td>8.90</td>
<td>8.53</td>
<td>6.36</td>
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<td>5.30</td>
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<tr>
<td>Total Variance</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>62.1%</td>
</tr>
</tbody>
</table>

Note: Comm/Enter. = communication/entertainment, Info. seeking = information seeking, self-maint = self-maintenance, home maint. = home maintenance, learning = novel/integrative learning
Inter-correlations between Trait Complexes and Distal Mediators

The means, standard deviations, and inter-correlations of trait complexes and distal mediators (i.e., interest, activities, and prior knowledge) are shown in Table 4. The intellectual/mastery approach trait complex was significantly positively associated with the interest composite \( (r = .42, p < .01) \) and with intellectually active prior experiences \( (r = .28, p < .01) \) while the traditional/avoidance trait complex was not related to interest or prior experiences. The interest composite had a significant positive correlation with intellectually active prior experiences \( (r = .25, p < .01) \). There was no significant relationship between intellectually active prior experiences and the knowledge composite. There was a significant positive relationship between the interest composite and the knowledge composite \( (r = .47, p < .01) \).
### Table 4. Inter-correlations Between Trait Complexes and Distal Mediators (Interest, Prior Experiences, and Prior Knowledge)

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<tr>
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<th>4.</th>
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<th>7.</th>
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<th>10.</th>
<th>11.</th>
<th>12.</th>
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<th>14.</th>
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<tr>
<td>5. Arts/hum. interest</td>
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<td>1.03</td>
<td>.04</td>
<td>.49**</td>
<td>.22*</td>
<td>.39**</td>
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<tr>
<td>6. Poli./econ. interest</td>
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<td>.05</td>
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<td>.47**</td>
<td>.30**</td>
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<td>2.79</td>
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<td>8. Active prior experiences</td>
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<td>4.33</td>
<td>.05</td>
<td>.28**</td>
<td>.01</td>
<td>.18</td>
<td>.30**</td>
<td>.21*</td>
<td>.25**</td>
<td>1.00</td>
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<td>9. Passive prior experiences</td>
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<td>.01</td>
<td>.02</td>
<td>.01</td>
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<td>1.00</td>
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<td>10. Arts/hum. knowledge</td>
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<td>.12</td>
<td>.18</td>
<td>.34**</td>
<td>.31**</td>
<td>.14</td>
<td>.34**</td>
<td>.19*</td>
<td>.08</td>
<td>1.00</td>
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<td>11. Poli./econ. knowledge</td>
<td>14.81</td>
<td>3.99</td>
<td>-.18</td>
<td>.16</td>
<td>.21*</td>
<td>.36**</td>
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<td>.34**</td>
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<td>12. Knowledge composite</td>
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<td>6.62</td>
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<td>.17</td>
<td>.23*</td>
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<td>13. Age</td>
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<td>-.27**</td>
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<td>.16</td>
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<td>14. Gender</td>
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<td>-.14</td>
<td>.13</td>
<td>.00</td>
<td>.06</td>
<td>1.00</td>
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</tbody>
</table>

*Note: N = 108. Internal consistency estimates (α, Cronbach, 1951) appear on the diagonal. Gender coded 1 = female, 2 = male

* p < .05, ** p < .01 level
Course Activities and Course Outcomes

Course activities and course outcomes of MOOC starters who participated in the study ($n = 108$) and MOOC starters who did not participate in the study are shown in Table 5 ($n = 938$). MOOC starters who participated in the study were more engaged in the course than MOOC starters who did not participate in the study, including more video lectures played, more Further Exploration pages visited, higher course grades earned, and more course module participation.

Course outcome distributions for MOOC starters who participated in the study and MOOC starters who did not participate in the study are located in Appendix C.

Table 5. Course Activities and Course Outcomes of MOOC Starters by Study Participation

<table>
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<tr>
<th>Variable</th>
<th>Study Participants</th>
<th>Non-Study Participants</th>
<th>t(df)</th>
<th>$d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Video lectures</td>
<td>25.3 (18.0)</td>
<td>10.5 (13.6)</td>
<td>$t(121.4) = 8.24^{**}$</td>
<td>.92</td>
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<tr>
<td>2. Further Exploration pages</td>
<td>4.9 (7.8)</td>
<td>1.7 (5.0)</td>
<td>$t(117.5) = 4.12^{**}$</td>
<td>.45</td>
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<tr>
<td>3. Course activities</td>
<td>30.2 (21.8)</td>
<td>12.3 (15.9)</td>
<td>$t(120.5) = 8.29^{**}$</td>
<td>.94</td>
</tr>
<tr>
<td>4. Course grade</td>
<td>56.5 (38.9)</td>
<td>12.8 (26.4)</td>
<td>$t(118.6) = 11.38^{**}$</td>
<td>1.31</td>
</tr>
<tr>
<td>5. Course completion</td>
<td>4.9 (1.6)</td>
<td>2.8 (1.9)</td>
<td>$t(142.9) = 12.36^{**}$</td>
<td>1.20</td>
</tr>
</tbody>
</table>

Note: MOOC starters who participated in the study ($n = 108$) and MOOC starters who did not participate in the study ($n = 938$). Course activities is the sum of video lectures played (54 available) and Further Exploration pages viewed (39 available), out of a possible 93 course activities. Course grade ranged from 0% to 100%. The course completion variable ranged from “1 = participation in one module” to “6 = participation in six modules.” **$p < .01$ level.

Inter-correlations between Predictors, Mediators, and Course Outcomes

Table 6 shows the mean, standard deviations, and inter-correlations between proximal mediators (i.e., course affective engagement and course activities) and course outcomes (i.e., course grade and course completion). Course affective engagement was positively associated
with course activities ($r = .19, p < .05$), course grade ($r = .23, p < .05$), and course completion ($r = .25, p < .05$). Course activities also showed significant positive relationships with course grade ($r = .56, p < .05$) and course completion ($r = .67, p < .01$). Table 7 shows the inter-correlations between predictors, mediators, and course outcomes. A significant positive relationship was found between the intellectual/mastery trait complex and course affective engagement ($r = .47, p < .01$). There was also a significant positive relationship found between the interest composite and course affective engagement ($r = .29, p < .01$). However, no relationships were found between the intellectually active prior experiences and course affective engagement, course activities, or course outcomes. Similarly, no relationships were found between the knowledge composite and course affective engagement, course activities, or course outcomes. Additionally, no relationships were found between interest and course activities or course outcomes.

Table 6. Inter-correlations Between Proximal Mediators and Course Outcomes

<table>
<thead>
<tr>
<th>Measure</th>
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<th>3</th>
<th>4</th>
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<td>3. Further Exploration pages</td>
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<td>4. Course activities</td>
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<td>.94**</td>
<td>.62**</td>
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<td>5. Course grade</td>
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<td>.35**</td>
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</tr>
<tr>
<td>6. Course completion</td>
<td>4.86</td>
<td>1.59</td>
<td>.25*</td>
<td>.68**</td>
<td>.29**</td>
<td>.67**</td>
<td>.79**</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: N = 108. Internal consistency estimate ($\alpha$, Cronbach, 1951) appears on the diagonal. High-correlations between course activities and video lectures and course activities and Further Exploration pages is due to whole-part (i.e., course activities is the sum of video lectures played and Further Exploration pages viewed). * $p < .05$, **$p < .01$ level.
Table 7. Inter-correlations Between Predictors, Mediators, and Course Outcomes

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Proximal Mediators</th>
<th>Course Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Course affective</td>
<td>Video</td>
</tr>
<tr>
<td></td>
<td>engagement</td>
<td>lectures</td>
</tr>
<tr>
<td>Traditional/avoidance</td>
<td>.08</td>
<td>-.13</td>
</tr>
<tr>
<td>Intellectual/mastery</td>
<td>.47**</td>
<td>.02</td>
</tr>
<tr>
<td>Distal Mediators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course interest</td>
<td>.09</td>
<td>-.10</td>
</tr>
<tr>
<td>Current news interest</td>
<td>.25*</td>
<td>-.03</td>
</tr>
<tr>
<td>Arts/hum. interest</td>
<td>.33**</td>
<td>-.05</td>
</tr>
<tr>
<td>Poli./econ. interest</td>
<td>.14</td>
<td>.06</td>
</tr>
<tr>
<td>Interest composite</td>
<td>.29**</td>
<td>-.04</td>
</tr>
<tr>
<td>Active prior experiences</td>
<td>.15</td>
<td>-.05</td>
</tr>
<tr>
<td>Passive prior experiences</td>
<td>.08</td>
<td>-.05</td>
</tr>
<tr>
<td>Arts/hum. knowledge</td>
<td>-.02</td>
<td>-.11</td>
</tr>
<tr>
<td>Poli./econ. knowledge</td>
<td>.09</td>
<td>.13</td>
</tr>
<tr>
<td>Knowledge composite</td>
<td>.05</td>
<td>.02</td>
</tr>
<tr>
<td>Age</td>
<td>.09</td>
<td>.34**</td>
</tr>
<tr>
<td>Gender</td>
<td>-.03</td>
<td>-.01</td>
</tr>
</tbody>
</table>

Note: N = 108. Gender coded 1 = female, 2 = male.
* p < .05, **p < .01 level
Path Models

The empirical data in this study was not consistent with the initial proposed model. The path model was revised before testing because there was no evidence found for significant relationships between intellectually active prior experiences and prior knowledge on course affective engagement, course activities, or course outcomes (see Figure 2). A path analysis was conducted to determine the causal effects of course grade and course completion using MPlus version 7.31 (Muthén & Muthén, 2015). The path analyses model with significant relationships is shown in Figure 2. The coefficients shown are standardized beta weights. Results of the model indicated a bad fit that could be improved with an additional path, \( \chi^2 (N = 108, 13) = 35.42, p < .01, \text{CFI} = .90, \text{RMSEA} = .13 \). The revision, adding a direct path from the intellectual/mastery trait complex to course affective engagement, made sense theoretically because those who score high on an intellectual/mastery trait complex are more likely to find learning opportunities to be interesting and motivating. A path analysis on the revised path model revealed that the fit of this model was good, \( \chi^2 (N = 108, 12) = 16.30, p > .05, \text{CFI} = .98, \text{RMSEA} = .06 \). Including the path significantly improved model fit, \( \Delta \chi^2 (N = 113, 1) = 19.12, p < .01 \). The revised path model is shown in Figure 3. Intellectual/mastery trait complex was predictive of interest as well as predictive of course affective engagement. By contrast, the traditional/avoidance trait complex was not predictive of interest. The revised model had a nonsignificant path between interest and course affective engagement. Course affective engagement was significantly predictive of course activities, which in turn predicted course grade and course completion. The indirect effect of the intellectual/mastery trait complex, through course affective engagement and course activities, to course grade was marginally significant (\( p = .07 \)). Similarly, the indirect effect of the intellectual/mastery trait complex, through course affective engagement and course activities, to course completion was also marginally significant (\( p = .06 \)).
Figure 2. Path analysis model showing significant relationships of personality trait complexes, interest, course engagement, course activities, course grade, and course completion; $\chi^2 (N = 108, 13) = 35.42, p < .01$, CFI = .90, RMSEA = .13.

* $p < .05$, ** $p < .01$ level
Figure 3. Final path analysis model showing significant relationships of personality trait complexes, interest, course engagement, course activities, course grade, and course completion; $\chi^2 (N = 108, 12) = 16.30, p > .05, \text{CFI} = .98, \text{RMSEA} = .06$.

* $p < .05$, ** $p < .01$ level
**Discussion**

The aim of this study was to examine the determinants of course engagement in a real-world learning environment, as it occurred in a humanities-focused online course. The determinants examined included distal predictors (i.e., trait complexes consisting of personality and achievement goal orientations), distal mediators (i.e., interest, prior knowledge, and prior experiences), and proximal mediators (i.e., course affective engagement, and course activities). The flexible nature of the course, in terms of the open availability of course materials and few negative consequences for not participating in the course in a prescribed manner, allowed for examination of course outcomes in a typical behavior performance environment as opposed to a maximal performance environment.

**Summary of Findings**

**Trait complexes.** In this study, an intellectual/mastery trait complex and a traditional/avoidance trait complex were computed, as guided by a factor analysis of personality and achievement goal orientations. I found that an intellectual/mastery trait complex mattered. The intellectual/mastery trait complex had significant positive zero-order correlations with interest related to course content, with intellectually active prior experiences, and with course affective engagement. These findings suggest that people who have a high intellectual/mastery trait complex are likely to find new learning to be enjoyable and would likely benefit from learning opportunities that are self-directed. By contrast, there were no significant correlations found between the traditional/avoidance trait complex and course-related interest and the traditional/avoidance trait complex and participation in intellectually active prior experiences. There was also no evidence found for significant relationships between the traditional/avoidance trait complex and finding the course interesting and enjoyable or participating in course activities. These results suggest that scoring high on the traditional/avoidance trait complex was
neither helpful nor harmful to participating in the course. By contrast, the intellectual/mastery trait complex did matter to finding the course interesting and enjoyable. However, similar to the traditional/avoidance trait complex, the intellectual/mastery trait complex did not show significant zero-order correlations with course activities, course grade, or course completion.

**Interest.** The intellectual/mastery trait complex was predictive of interest in the path model. However, the traditional/avoidance trait complex was not predictive of interest. Zero-order correlations showed that interest was significantly positively correlated with participating in intellectually active prior experiences. Additionally, interest was significantly positively correlated with knowledge in arts/humanities and politics/economics, suggesting that interest may have a directing role in the formation of relevant individualized knowledge structures. As expected, participants in the study were interested in course-related topics. It may be that interest in the course most likely led participants to initially register for the course, highlighting the role of interest in directing effort and attention toward certain activities. However, interest was not predictive of course affective engagement or course outcomes. The sample may have seen a restricted range of interest scores, and thereby reducing correlations with course affective engagement or course outcomes.

**Intellectually active prior experiences and prior knowledge.** The extent to which people participated in intellectually active prior experiences (e.g., reading non-fiction books, creative writing) was not significantly associated with the course outcomes in the current study (i.e., course affective engagement, video lectures viewed, Further Exploration pages viewed, course activities composite, course grade, and extent of course completion). There was also no relationships found between prior knowledge (i.e., knowledge related to arts/humanities and politics/economics) and course outcomes (i.e., course affective engagement, video lectures...
viewed, Further Exploration pages viewed, course activities composite, course grade, and extent of course completion). Range restriction of prior knowledge and participation in intellectually active prior experiences may also be a factor for this particular current study sample. People who participated in the course may be more likely to engage in intellectually active prior experiences and have more prior knowledge in course related topics than would be seen in a general population. Overall, although there was a significantly positive zero-order correlation found between prior knowledge and intellectually active prior experiences, course outcomes were not associated with prior knowledge or prior experiences.

**Course affective engagement.** Participants who scored high on the intellectual/mastery trait complex and course-related interest tended to find the course more interesting, fun, and enjoyable than participants who scored lower on the intellectual/mastery trait complex. Course affective engagement mattered to course participation. Participants who reported higher course affective engagement participated in more course activities, earned higher course grades, and completed more course modules. These findings highlight the importance an engaging course, as it promoted active course participation.

Overall, participants higher on an intellectual/mastery trait complex were more engaged in the course, relative to participants low on an intellectual/mastery trait complex in this learning environment. Participants who scored high on an intellectual/mastery trait complex found the course to be more engaging, which led to effort to engage in course activities. In turn, course activities were predictive of higher course grades and course completion.

**Implications**

This study has implications for adult learners. Learners’ choices range from low structured courses to high structured courses. Learners’ meta-cognition or self-awareness of their own preferences, motivations, and intentions may inform their decision of the type of courses in
which they can be most successful. Knowing how they learn and under what circumstances is likely to allow learners to engage in learning activities throughout the lifespan.

Understanding how adults engage in self-directed learning activities may also have important implications for adult educators. Although online courses may be popular for its self-directedness and flexibility, a general interest in the topic may not sustain learners’ affective engagement and participation in learning. Additionally, online course providers may consider the type of course activities that can help learners feel that the course is interesting and enjoyable.

**Limitations and Future Directions**

There were several limitations in the current study. There was a range restriction issue that may have attenuated the relationships found in the current study. More specifically, range restriction on interest, intellectually active prior experiences, and prior knowledge may have attenuated relationships with course affective engagement, course activities, course grade, and course completion. In addition, the current sample was relatively small and homogenous. Although MOOC courses typically have thousands of learners register, the number of learners who actually participated in the course was limited. The number of learners who participated in the course and also chose to participate in the research study was also limited.

Due the online nature of the course, the study was restricted in the number of measures that could be included in the survey. Future studies may consider expanding the measures used in the current study. For example, future studies can assess a broad range of non-ability determinants to expand the type of trait complexes examined. Additionally, the study was limited to examining one course and no comparison group. Future research can focus on comparing the determinants of engagement in self-directed learning in different course topics. Comparing course engagement and course outcomes in different course topics would allow for more
understanding of the role of non-ability determinants in a variety of typical performance environments.

Despite these limitations, the study has its strengths. One strength of the study was in the collection of objective course behaviors and its real-world training environment. Furthermore, participants engaged with actual course materials rather than a learning task that may contain ambiguous training materials. Lastly, the amount of learners in the MOOC allowed for a larger study sample size than would be available in a typical in-person course for adult learners.

Conclusions

Research in adult intellectual development tends to focus on the decline of reasoning abilities. However, investment theories of adult intellectual development focus on the direction provided by both ability and non-abilities traits to continuous development across the lifespan. The current study contributes to the literature by examining determinants of adult intellectual development and testing a model based on investment theories of adult intelligence. Although most previous studies have focused on academic knowledge formation, this study focused on a specific learning activity. Furthermore, this study provided an integrative approach to the study of individual traits, including personality, achievement goal orientations, and interest, which are often studied separately. Additionally, a trait complex approach allows for the study of the inter-relationships between personality traits and achievement goal orientations. Self-directed learning activities provide opportunities for adults to continue to develop their knowledge, skills, and abilities outside of the traditional school setting. A focus on the factors that influence their success is critical for understanding continuous learning across the lifespan.
References


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https://doi.org/10.1016/j.jrp.2005.08.007


https://doi.org/http://dx.doi.org/10.3758/bf03196444


https://doi.org/10.1002/per.692


Appendix A
Measures Developed for the Current Study

Activity Participation:
Directions: In a typical week, how often do you engage in the following activities, outside of school or work?

<table>
<thead>
<tr>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hardly ever</td>
<td>Occasionally</td>
<td>Sometimes</td>
<td>Frequent</td>
<td>Almost Always</td>
</tr>
</tbody>
</table>

1. Creative writing or painting/drawing
2. Playing or learning a musical instrument
3. Reading non-fiction books
4. Completing crossword puzzles or played word games (e.g., Scrabble)
5. Watching trivia game shows (e.g., Jeopardy)
6. Learning a new language
7. Making things (such as furniture, toys, clothes)
8. Exercising or recreational activities
9. Repairing electrical or mechanical devices or machines
10. Visiting friends
11. Talking or messaging on the phone
12. Helping friends or family
13. Shopping
14. Cleaning home
15. Paying bills
16. Listening to music on radio
17. Watching or listening to sports events
18. Watching or listening to talk shows or entertainment programs

Directions: How often do you use the Internet for the following activities, outside of your requirements for school or work?

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<thead>
<tr>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hardly ever</td>
<td>Occasionally</td>
<td>Sometimes</td>
<td>Frequent</td>
<td>Almost Always</td>
</tr>
</tbody>
</table>

1. Entertainment (e.g., games, music, videos)
2. Information (e.g., search engines, research)
3. Shopping and/or Banking (e.g., purchasing on Amazon)
4. News information (e.g., reading news stories)
5. Communication (e.g., sending or reading email, instant messaging, video chatting)
6. Social network sites (e.g., Facebook, Twitter)
Course Interest:
How interested are you in the learning about the following topics in this course?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very uninterested</td>
<td>Somewhat uninterested</td>
<td>Neither interested or uninterested</td>
<td>Somewhat interested</td>
<td>Very interested</td>
</tr>
</tbody>
</table>

1. African culture and history
2. American culture and history
3. Chinese culture and history
4. French culture and history
5. Mexican culture and history
6. Democracy and modernity
7. Globalization and capitalism
8. Racism and immigration
9. Cultural and intellectual life

Current News Interest:
Directions: In the following sections, you will be asked about your interest in following current events. These are generally interesting or significant events that do not necessarily involve you, friends, or family.

1. In general, how interested are you in following current events?

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<tr>
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<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very uninterested</td>
<td>Somewhat uninterested</td>
<td>Neither interested or uninterested</td>
<td>Somewhat interested</td>
<td>Very interested</td>
</tr>
</tbody>
</table>

2. In general, how important is it for you to stay up-to-date on current events?

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<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very unimportant</td>
<td>Somewhat unimportant</td>
<td>Neither important or unimportant</td>
<td>Somewhat important</td>
<td>Very important</td>
</tr>
</tbody>
</table>
Arts/Humanities and Politics/Economics News Interest:

Directions: How well do the following statements describe you?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all like me</td>
<td>Not much like me</td>
<td>Neutral</td>
<td>Somewhat like me</td>
<td>Very much like me</td>
</tr>
</tbody>
</table>

**Arts/Humanities**
1. News headlines about cultural topics like literature, music, and art tend to capture my attention.
2. I like to discuss news about cultural topics like literature, music, and art with family and/or friends.
3. The media I read, watch, or listen to usually focus on cultural topics like literature, music, and art.
4. I try to stay informed about news in the arts.
5. I pay attention to in-depth news coverage about cultural events in my community (e.g., museum exhibits and performances).
6. I read, watch, or listen to critical reviews of cultural topics and events (e.g., new literature, movies, performances).
7. I enjoy learning about cultural events such as new literature, music, performances, and fashion.

**Politics/Economics**

Directions: How well do the following statements describe you?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all like me</td>
<td>Not much like me</td>
<td>Neutral</td>
<td>Somewhat like me</td>
<td>Very much like me</td>
</tr>
</tbody>
</table>

1. News headlines about political topics like business, economics, and government tend to capture my attention.
2. I like to discuss news about political topics like business, economics, and government with family and/or friends.
3. The media I read, watch, or listen to usually focus on political topics like business, economics, and government.
4. I try to stay informed about news in politics and economics.
5. I pay attention to in-depth news coverage about political and economic events in my community (e.g., local elections and political rallies).
6. I read, watch, or listen to debates of political topics and events (e.g., business, economics, and government).
7. I enjoy learning about political events such as new elections, laws, and business development.

**Prior Knowledge:**

Directions: In the following section, you will see a series of questions about current events that are generally prevalent to a U.S. population. Each question contains four answer choices.

Please select the response that you believe correctly answers the question. If you do not know the answer, please select your best guess.

Some questions will display an image related to the question.

***Special request: We ask that you please do not use any resources (e.g., Google, asking a friend) to answer the questions.***

**Arts/Humanities sample items (20 items)**

1. Which Latin American Nobel Prize winning author of One Hundred Years of Solitude died on April 17, 2014?
   - Carlos Fuentes
   - Gabriel García Márquez
   - Paulo Coelho
   - Sandra Cisneros

2. Which film about a jazz student and his abusive drum instructor won both the U.S. Dramatic Grand Jury prize and the Audience Award at the Sundance Awards in 2014?
   - Whiplash
   - Birdman
   - Boyhood
   - Foxcatcher

3. Who wrote "American Sniper: The Autobiography of the Most Lethal Sniper in U.S. Military History," which was released in 2012 and was a New York Times Best Seller?
   - Brian Chontosh
   - Michael Monsoor
   - Chris Kyle
   - Bryan Anderson

**Politics/Economics sample items (20 items)**

1. What was American soldier Sergeant Bowe Bergdahl, who was held captive by the Taliban from 2009-2014, charged with in 2015?
   - Desertion
   - Conduct unbecoming to an officer
Unlawful use of force
Embezzlement

2. What governor was sentenced to 14 years in prison in 2011 for trying to sell President Obama's senate seat?
- Rod Blagojevich
- John McGee
- Richard Miranda
- Scott Bundgaard

3. The nation's first black U.S. attorney general stepped down from his position in 2014. What is his name?
- John K. Blackwell
- Eric H. Holder
- Harold E. Ford Jr.
- Kendrick B. Meek

Course Affective Engagement

Use the rating scale below to describe how accurately each statement describes your experiences in the course “America Through Foreign Eyes.”

1
2
3
4
5
Very inaccurate
Moderately inaccurate
Neither inaccurate or accurate
Moderately accurate
Very accurate

1. My concentration is completely focused in this course.
2. The course has a great entertainment value.
3. I am enjoying participating in this course very much.
4. I am having fun in this course.
5. I am thrilled in this course.
6. I am strongly involved in this course.
7. I am bored in this course.
8. I feel the desire to do something else while participating in this course.
9. I would like to participate in a similar course in the future.
10. I notice that the course triggers my interest.
11. I am interested in this course.
Course Data:
The online education platform provider Coursera provided record of learner participation in the course.

Course Activities
- 54 video lectures available
- 39 Further Exploration web pages available, containing extra course materials

Course Grade
Class grade was based on graded activities, including quizzes and discussion forum participation.
- 5 quizzes, worth 60% of class grade
- 13 discussion forums to contribute in, worth 40% of class grade

Course Completion
There were a total of six course modules:
- Introduction
- America through African Eyes
- America through Chinese Eyes
- America through French Eyes
- America through Mexican Eyes
- Reversing the Gaze
Appendix B

About the Course

*America through Foreign Eyes* was a five-week long interdisciplinary course. It was described as being “focused on perceptions of America abroad, the course is a cross between World Cultures and American Studies” (Fette, 2015). The course contained six modules: “Introduction,” “America through African Eyes,” “America through Chinese Eyes,” “America through French Eyes,” “America through Mexican Eyes,” and “Africa, China, France, and Mexico through American Eyes.” The format of the class included weekly lecture videos and quizzes. There were also opportunities to engage in a discussion forum and to participate in supplemental materials such as film and readings. The next pages include further information about the course, the course syllabus, and screenshots of video lectures, Further Exploration pages, and the discussion forum.
About the Course:

America Through Foreign Eyes

What do foreigners think of the United States? Foreign observers and travelers are rarely indifferent to American culture and people. This course examines historical and contemporary views of America held by Chinese, Mexican, French, and multiple African nationals. Join us to examine the multiple perspectives of America through foreign eyes.

Sessions

October 8, 2015 - November 12, 2015

Starts in 2 months

Eligible for

Course Certificate

Course at a Glance

- 5 weeks of study
- 3-5 hours/week
- English
Certificate Available For Learners

Complete this course and showcase your success with a Certificate - it's trusted, secure and issued by Coursera.

Learn more about Certificates »

//signature/course/foreigneyes/974938

Instructors

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Dr. Julie Fette (/instructor/fette)
Rice University (/rice)

(/instructor/annechao)
Dr. Anne Chao (/instructor/annechao)
Rice University (/rice)

(/instructor/jfleisher)
Dr. Jeffrey Fleisher (/instructor/jfleisher)
Rice University (/rice)

(/instructor/moramay)
Dr. Moramay López-Alonso (/instructor/moramay)
Rice University (/rice)

(/instructor/rach)
Ms. Rachel Schneider (/instructor/rach)
Rice University (/rice)

Categories

Humanities (/courses?categories=humanities)
Social Sciences (/courses?categories=socsci)
About the Course
The United States has always been a source of fascination—both attraction and repulsion—for the people of France, Mexico, China, and African countries such as Nigeria, Ghana, and Sudan.

*America Through Foreign Eyes* is a rich, interdisciplinary, international course that features Rice faculty from a variety of disciplines and area studies. Focused on perceptions of America abroad, the course is a cross between World Cultures and American Studies. The course features four main segments, each covering the perceptions and interactions of particular regions with America, Americans and Americanization.

Course Syllabus

**Introduction to the Course**, Dr. Julie Fette

**Week 1** Module 1: America through African Eyes, Dr. Jeffrey Fleisher

**Week 2** Module 2: America through Chinese Eyes, Dr. Anne Chao

**Week 3** Module 3: America through French Eyes, Dr. Julie Fette

**Week 4** Module 4: America through Mexican Eyes, Dr. Moramay López-Alonso

**Week 5** Module 5: Reversing the Gaze: Africa, China, France, and Mexico through American Eyes, Drs. Fleisher, Chao, Fette, López-Alonso

Recommended Background
The material is appropriate for anyone with an interest in humanities courses. No special background is required other than knowledge of English.

Suggested Readings
There are no required readings. Suggested readings, films, or materials are at the student's discretion to obtain.

Course Format
The class will consist of about 10 lecture videos (5-10 minutes each) per week.
Each week offers historical and modern perspectives from one country or region about the United States. Recommended homework consists of readings, film viewings, and supplemental resources. Additionally, students are asked to apply what they have learned through quizzes and writing assignments that are designed to let students engage with the major themes of the course.

All course videos will be viewable when the course starts. Assignments, discussions and quizzes will open on a weekly basis in the sequence listed in the course syllabus.

FAQ

Do I need to speak the languages explored in the course?

No, the course content is presented in English. However, some course material will also be available in other languages.

What resources will I need for this class?

A working computer and internet connection.

What can I earn for completing this course?

You can earn a Verified Certificate (http://www.coursera.org/signature) by verifying your work. If you choose not to verify your work, you can still participate in the complete course and earn a Statement of Accomplishment.

Can I get credit for this course?

Academic credit for this course is not offered.
Course Syllabus:

America through Foreign Eyes Syllabus

Course Goals:
This course will allow students to:
1. Study key French, Mexican, African, and Chinese intellectual and artistic works about the United States and Americans
2. Analyze foreign cultural opinion of the U.S. and Americans, and of Americanization
3. Weigh critiques of one’s culture with detachment and objectivity
4. Recognize and learn to challenge our own socio-cultural preconceptions
5. Defend our opinions with reasoned arguments

Four Overarching Themes:
1) Democracy and Modernity
2) Globalization and Capitalism
3) Racism and Immigration
4) Intellectual and Cultural Life

Introduction, Julie Fette
Chapter 1: America through Foreign Eyes: Introduction to the Course
Chapter 2: Perceptions of Other Cultures: Generalizations, Essentialisms, and Stereotypes
Chapter 3: Student Approaches and Course Material

Module 1: America through African Eyes, Jeffrey Fleisher
Chapter 1: Introduction: America through African Eyes
Chapter 2: Africans Appropriating Americans: Elvis and the Chewa of Malawi
Themes: Globalization and Capitalism, Intellectual and Cultural Life

Chapter 3: Africans Appropriating Americans: Tupac Shakur in Sierra Leone
Themes: Globalization and Capitalism, Intellectual and Cultural Life

Chapter 4: Africans in America: America through Enslaved Peoples' Eyes
Themes: Racism and Immigration

Chapter 5: Africans in America: Sudanese refugees in America: Navigating America in the Twentieth Century
Themes: Racism and Immigration, Democracy and Modernity

Chapter 6: Africans in America: Africans and Race in America
Themes: Racism and Immigration, Democracy and Modernity

Chapter 7: African-Americans and Africans in Ghana: Kwame Nkrumah, American Civil Rights, and Ghanaian Independence
Themes: Globalization and Capitalism, Democracy and Modernity

Chapter 8: African-Americans and Africans in Ghana: Slave Tourism: How West Africans see African-American Tourists
Themes: Globalization and Capitalism, Intellectual and Cultural life

Module 2: America through Chinese Eyes, Anne Chao

Chapter 1: Introduction to the Chinese Cultural System

Chapter 2: First Contact with America and the West
Themes: Early Globalization, Capitalism

Chapter 3: China's Entry Into the World: Opium, the Unequal Treaties and the Exclusion Act
Theme: Racism and Immigration

Chapter 4: From Reform to Revolution
Theme: Democracy and Modernity
Chapter 5: The New Culture Movement
Theme: Intellectual and Cultural Life

Chapter 6: Madame Chiang Kai-shek: A Study in Chinese and American Interactions in the Republican Era
Theme: Democracy and Modernity

Chapter 7: America as Enemy and as Friend: The Great Proletarian Cultural Revolution and the Ping-Pong Diplomacy
Theme: Democracy and Modernity

Chapter 8: China’s Re-entry into the World
Theme: Globalization and Capitalism

Chapter 9: Taiwan and Hong Kong
Theme: Democracy and Modernity

Chapter 10: Voices from China and Taiwan
Theme: Intellectual and Cultural Life

Module 3: America through French Eyes, Julie Fette

Chapter 1: France and America: Friend and Foe
Themes: Democracy and Modernity

Chapter 2: America: Land of Democracy
Themes: Democracy and Modernity

Chapter 3: America = Modernity
Themes: Democracy and Modernity

Chapter 4: American Capitalism: Mass Production, Mass Consumption, and Inequality
Themes: Globalization and Capitalism
Chapter 5: Globalization and the Cultural Exception
Themes: Globalization and Capitalism

Chapter 6: Racism and Xenophobia in the United States and France
Themes: Racism and Immigration

Chapter 7: Religion and Secularism
Themes: Racism and Immigration

Chapter 8: Franco-American Cultural Exchange. Art, Artists and Art Patrons
Themes: Intellectual and Cultural Life

Chapter 9: Intellectual Life: The American University
Themes: Intellectual and Cultural Life

Chapter 10: America as Hyperreality
Themes: Intellectual and Cultural Life

Module 4: America Through Mexican Eyes, Moramay López-Alonso
Chapter 1: America through Mexican Eyes: Inseparable Histories

Chapter 2: The Gringo, Yankee, and American
Themes: Racism and Immigration

Chapter 3: Immigration
Themes: Racism and Immigration

Chapter 4: Racism
Themes: Racism and Immigration

Chapter 5: Religion
Themes: Intellectual and Cultural Life
Chapter 6: Temples of Knowledge: Education, Universities and Libraries
Themes: Intellectual and Cultural Life

Chapter 7: Food
Themes: Intellectual and Cultural Life

Chapter 8: American Women
Themes: Intellectual and Cultural Life

Chapter 9: Capitalism and Modernity
Theme: Democracy and Modernity, Globalization and Capitalism

Chapter 10: Democracy and Empire
Theme: Democracy and Modernity, Globalization and Capitalism

Module 5: Reversing the Gaze
Chapter 1: Reversing the Gaze to Africa

Chapter 2: Reversing the Gaze to China

Chapter 3: Reversing the Gaze to France

Chapter 4: Reversing the Gaze to Mexico

Figure B2. Course syllabus provided to course learners.
Grading and Logistics:

Grading Policy
Your final course grade is dependent on the successful completion of the required quizzes and contributions to discussion forums. Students with final grades of 75% or higher will pass this course.

The final grade will be calculated as follows:
- Discussion Forum Contributions - 46% of Final Grade
- Quizzes - 60% of Final Grade

Required Discussion Forum Contributions and Quizzes
- 13 discussion forum contributions are required to complete the course.
- 5 quizzes are required to complete the course.

Discussion Forum Contributions
After watching all of a module’s lecture videos, students should contribute at least one comment to each of 13 Graded Discussion Forums.
1. 1 contribution for Introduction Discussion #1
2. 1 contribution for Introduction Discussion #2
3. 1 contribution for Module 1 Discussion #1
4. 1 contribution for Module 1 Discussion #2
5. 1 contribution for Module 2 Discussion #1
6. 1 contribution for Module 2 Discussion #2
7. 1 contribution for Module 3 Discussion #1
8. 1 contribution for Module 3 Discussion #2
9. 1 contribution for Module 4 Discussion #1
10. 1 contribution for Module 4 Discussion #2
11. 1 contribution for Module 5 Discussion #1
12. 1 contribution for Module 5 Discussion #2
13. 1 contribution for Module 5 Discussion #3

Quizzes
After watching all of a module’s lecture videos, students
3. Module 2: China Quiz
4. Module 3: France Quiz
5. Module 4: Mexico Quiz

Figure B3. Course grading and logistics provided to course learners.
Course Screenshots:

Figure B4. Screenshot of a video lecture, China course module.
Figure B5. Screenshot of a video lecture, China course module.
Figure B6. Screenshot of a video lecture, Africa course module.
Figure B7. Screenshot of a video lecture, Africa course module.
Figure B8. Screenshot of a video lecture, Mexico course module.
Figure B9. Screenshot of a video lecture, Mexico course module.
Figure B10. Screenshot of a video lecture, France course module.
**Figure B11.** Screenshot of a Further Explorations page, Africa module.

**Figure B12.** Screenshot of a Further Explorations page, France module.
Figure B13. Screenshot of a course quiz, Africa module.

Figure B14. Screenshot of course discussion forum.
### Graded Weekly Discussion Forums

Each week, post your responses to the weekly discussion forum questions. Students are required to post once per question for a participation grade. Please read our forum posting policies before posting or starting a new thread.

<table>
<thead>
<tr>
<th>Sub-forum</th>
<th>Latest Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction Question 1 Forum</td>
<td>OFFICIAL, Before beginning, please ... (11 months ago)</td>
</tr>
<tr>
<td>Introduction Question 2 Forum</td>
<td>OFFICIAL, Why did you sign up for this? ... (11 months ago)</td>
</tr>
<tr>
<td>Africa Question 1 Forum</td>
<td>helping integrate newcomers (11 months ago)</td>
</tr>
<tr>
<td>Africa Question 2 Forum</td>
<td>my view on Africa and America (11 months ago)</td>
</tr>
<tr>
<td>China Question 1 Forum</td>
<td>Chinese and American relationship (11 months ago)</td>
</tr>
<tr>
<td>China Question 2 Forum</td>
<td>my view on America and China (11 months ago)</td>
</tr>
<tr>
<td>France Question 1 Forum</td>
<td>OFFICIAL, Describe an example from your ... (11 months ago)</td>
</tr>
<tr>
<td>France Question 2 Forum</td>
<td>OFFICIAL, How has your view of the ... (11 months ago)</td>
</tr>
<tr>
<td>Mexico Question 1 Forum</td>
<td>OFFICIAL, Upload an image (low-scale) ... (11 months ago)</td>
</tr>
<tr>
<td>Mexico Question 2 Forum</td>
<td>OFFICIAL, How has your view of the ... (11 months ago)</td>
</tr>
<tr>
<td>Reversing the Gaze Question 1 Forum</td>
<td>OFFICIAL, After completing all the ... (11 months ago)</td>
</tr>
<tr>
<td>Reversing the Gaze Question 2 Forum</td>
<td>OFFICIAL, Does the United States ... (11 months ago)</td>
</tr>
<tr>
<td>Reversing the Gaze Question 3 Forum</td>
<td>OFFICIAL, There are many other regions ... (11 months ago)</td>
</tr>
</tbody>
</table>

There's nothing here yet, you can be the first!

Click Start new thread

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**Figure B15.** Screenshot of graded weekly discussion forum.
Appendix C

Distributions of Course Outcomes

Figure C1. Video lectures viewed distribution for MOOC starters who did not participate in the study ($n = 938$; top) and MOOC starters who participated in the study ($n = 108$; bottom).
Figure C2. Further Exploration pages viewed distribution for MOOC starters who did not participate in the study ($n = 938$; top) and MOOC starters who participated in the study ($n = 108$; bottom).
Figure C3. Course activities distribution for MOOC starters who did not participate in the study ($n = 938$; top) and MOOC starters who participated in the study ($n = 108$; bottom).
Figure C4. Course grade distribution for MOOC starters who did not participate in the study ($n = 938$; top) and MOOC starters who participated in the study ($n = 108$; bottom).
Figure C5. Course module completion distribution for MOOC starters who did not participate in the study ($n = 938$; top) and MOOC starters who participated in the study ($n = 108$; bottom).