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Empirical assessment of college student-athletes' persistence in e-learning courses: A case study of a U.S. National Association of Intercollegiate Athletics (NAIA) institution

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ABSTRACT

In recent years, the application of Information Technologies (IT) has fostered a tremendous growth in e-learning courses at colleges and universities in the United States. Subsequently, some colleges and universities have reported dropout rates of over 60% in e-learning courses. This research investigated persistence in e-learning courses of 187 college student-athletes. To predict the persistence of college student-athletes enrolled in e-learning courses, a conceptual model was proposed and assessed based on students' factors. The factors investigated included students' attitude toward computers, students' intrinsic and extrinsic motivation, students' perceived satisfaction, and students' previous academic performance measures (high school grade point average (GPA) and Scholastic Aptitude Test (SAT) score). These factors have previously shown tendencies toward persistence in e-learning courses. Results of this study indicate that students' high school GPA was a significant predictor of e-learning course persistence for college student-athletes.

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1. Introduction

In recent years, the application of Information Technologies (IT) has fostered a tremendous growth in e-learning courses in colleges and universities in the United States (Levy, 2007; Terrell, 2005). According to Morris, Wu, and Finnegan (2005), the persistence of students in e-learning courses is significantly less than that of their counterparts in traditional courses. To mitigate the lack of persistence in e-learning courses, Terrell suggested that institutions "must investigate ways to address the learning needs and styles of different types of learners" (p. 281). Subsequently, Levy defined dropout (non-persistent) students as "students that voluntarily withdraw from e-learning courses while acquiring financial penalties" (p. 188). Levy's research defined persistent students as students who completed the required tasks or assignments and who remained enrolled throughout the designated e-learning enrollment period. Woodley, DeLange, and Tanewski (2001) and Levy suggested that additional research in the constructs contributing to a lack of persistence in e-learning courses should be studied by way of identifying target populations that fail to complete e-learning courses.

According to Levy (2007), persistent students display a higher level of perceived satisfaction with the e-learning system than do non-persistent students. Vuorela and Nummemaa (2004) reported that in e-learning systems, students' attitude toward computers "[does] not predict the activity in the learning environment" (p. 764). However, participants interpreted the "learning environment more negatively" (Vuorela & Nummemaa, p. 773). Therefore, in e-learning systems, students' attitude toward computers may contribute to a lack of persistence. Liaw (2002) concluded that a user's positive attitude toward computers plays a critical role in persistence.

Moon and Kim (2001) and Venkatesh and Davis (2000), suggested that extrinsic and intrinsic motivation contribute to the user's positive experience with computers. Furthermore, Gaston-Gayles (2005) suggested that research on academic motivation of the college student-athlete has received limited attention. Roca, Chiu, and Martinez (2006) and Levy (2007), suggested that persistence of students in e-learning courses is partially determined by perceived satisfaction with the e-learning system. Roca et al. investigated students' continuance intentions in e-learning courses, finding that a students' intention to continue to utilize an e-learning system could be determined by expressed satisfaction with his or her experience. Additionally, Hollis (2001) reported that successful academic support services for college student-athletes display a high degree of perceived satisfaction.

Morgan (2005) reported that previous academic performance measures such as high school grade point average (GPA), Scholastic Aptitude Test (SAT) composite score, gender, and academic classification account for 55% of the variance in the student-athletes' cumulative college GPA. In e-learning courses, Parker (2003) reported that higher math scores relate well with students' persistence. Young

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and Sowa (1992) reported that high school GPA is one of the most accurate predictors of academic success for minority student-athletes.

Huang, Jacobs, Derevensky, Gupta, and Paskus (2007) suggested that college student-athletes should be studied as a separate and distinct population. In investigations specifically involving student-athletes, Engwall, Hunter, and Steinberg (2004) reported that student-athletes cheated significantly more frequently than non-athletes. Furthermore, Keim and Strickland (2004) reported that a large number of colleges and universities provide e-learning courses designed solely for student-athletes.

The problem addressed in this research was the persistence of college student-athletes enrolled in e-learning courses at a National Association of Intercollegiate Athletics (NAIA) institution. The purpose of this research was to assess the contributions of attitude toward computers, intrinsic and extrinsic motivation, perceived satisfaction with the e-learning system, and previous academic performance measures (high school GPA and SAT score) on the persistence of college student-athletes enrolled in e-learning courses (see Fig. 1).

2. Theoretical background

2.1. Persistence in e-learning

In recent years, the application of information technologies has fostered a tremendous growth in e-learning courses, with over 70% of colleges and universities in the United States offering some form of e-learning education (Masiello, Ramberg, & Lanka, 2005; McMurray, 2007). Keim and Strickland (2004) reported that many colleges and universities provide e-learning courses designed solely for student-athletes. Carr and Ledwith (2000), Morris et al. (2005), Parker (2003), and Kerr, Rynearson, and Kerr (2006) reported substantially lower rates of persistence in e-learning courses when compared to traditional courses. According to Carr and Ledwith, the rate of persistence of students in e-learning courses is less than 60% at some institutions.

Parker (2003) suggested that "there is a critical need for colleges to be able to predict with some accuracy the potential persistence of distance education students" (p. 47). Parker reported that the level of self-motivation is a significant predictor of academic persistence among the students of a small community college. Parker also found that self-motivated students engaged in e-learning are more inclined to be self-directed, leading to enhanced persistence in e-learning courses. Terrell (2005), in an investigation of e-learning, reported that students with a "sensing approach to information perception completed the program at a rate twice that of their peers preferring an intuitive approach" (p. 216). Parker suggested that future research should be directed toward the development of constructs that can be utilized in the prediction of persistence in e-learning courses.

While several studies have reported on the predictors, effects, and results of persistence in e-learning, until recently a concise and clear definition of "dropout" had not been formulated (Chiu, Hsu, Sun, Lin, & Sun, 2005; Doherty, 2006; Levy, 2007; Roca et al., 2006). Subsequently, Levy defined dropout (or non-persistent) students as "students that voluntarily withdraw from e-learning courses while acquiring financial penalties" (p. 188). He also suggested that additional research in the constructs contributing to a lack of persistence in e-learning courses should be studied. To understand the constructs contributing to these lower rates of persistence e-learning courses, researchers should identify target populations that fail to persist in e-learning courses.

Researchers have investigated various constructs and theories, in an attempt to assess users' persistence in e-learning courses (Kember, 1995; Levy, 2007; Morris et al., 2005; Terrell, 2005; Roca et al., 2006; Woodley et al., 2001). Kember postulated four key constructs: social integration, academic integration, external attribution, and academic incompatibility in the development of a causal model of persistence in e-learning courses. He claimed that the constructs account for 80% of the variance in e-learning persistence. Subsequently, Woodley et al. replicated Kember's work and found little statistical significance in the proposed causal model. Additional theories employed in the assessment of persistence in e-learning include: the Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989), the Expectancy Disconfirmation Theory (EDT) (Oliver, 1980), and the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1973). Furthermore, popular investigative constructs that have been assessed in e-learning persistence include: academic motivation, attitude, demographics, learning styles, locus of control, perceived satisfaction, and previous academic performance measures.

2.2. College student-athletes

The scholastic performance of student-athletes, as measured by academic achievement and retention, is an area of major concern for college and university administrators (Hamilton, 2007; Wolverton, 2006). The National Collegiate Athletic Association (NCAA) and the NAIA support and fund programs designed to improve the academic success of member student athletes (Wolverton). A large number of schools have organized

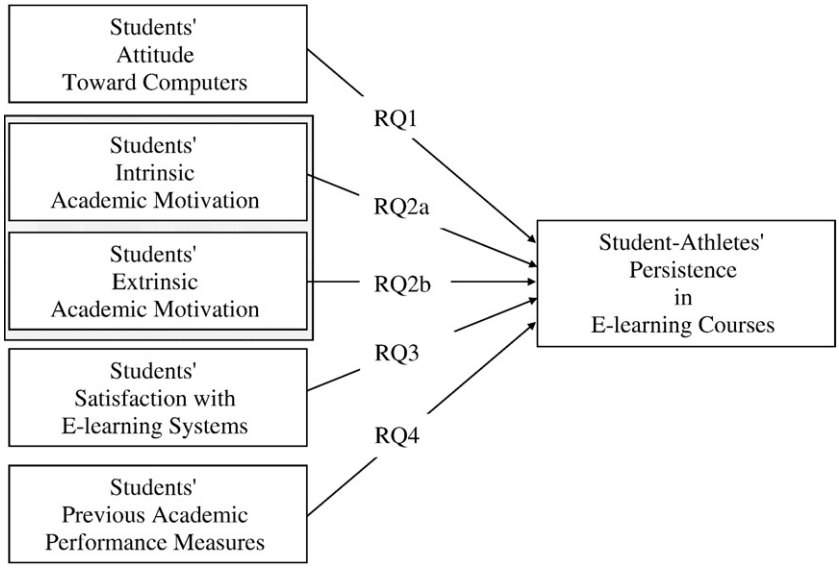

Fig. 1. Conceptual model for college student-athletes' persistence in e-learning.

and require their student-athletes to attend special courses on topics such as university rules, study skills development, testing strategies, and time management, and to establish specific short-term academic goals and objectives (Wolverton). Institutional incentives range from providing academic support to the college athlete, to requiring attendance at supported study periods (Keim & Strickland, 2004). Keim and Strickland reported these support services were provided only to the student athletic population, with the specific aim of creating a structure that would assist in the development of positive academic attitude and motivation.

Persistence of college student-athletes in areas such as athletic training and performance (Baker, Cote, & Deakin, 2004), and in traditional courses (Hollis, 2001) has been researched. Hollis evaluated academic services and resources that positively influence student-athlete college careers. In the area of athletic performance, Mallett and Hanrahan (2004) reported that persistence in student-athletes is related to "personal goals, achievement, and strong self-belief" (p. 198).

Huang et al. (2007) suggested that college student-athletes should be studied as a separate and distinct population. In investigations specifically involving student-athletes, Engwall et al. (2004) reported that student-athletes cheated significantly more frequently than non-athletes. They also reported significantly greater incidence of gambling among college student-athletes when compared to the non-athlete population. In a NCAA-sponsored study of over 20,000 college student-athletes, Huang et al. also found that both male and female student-athletes had a higher incidence of gambling than did the non-athlete population. Furthermore, Keim and Strickland (2004) reported that a large number of colleges and universities provide e-learning courses designed solely for student-athletes. Therefore, this research evaluated various constructs in the assessment of persistence of college student-athletes enrolled in e-learning courses at an NAIA institution.

2.3. Attitude towards computers

For this research, attitude toward computers was defined as positive or negative feeling about the use of computer technologies. The classical research of Fishbein and Ajzen (1975) suggested that attitude toward an event or entity plays a significant role in influencing the subsequent behavior of the individual. Additionally, Ajzen (1991) suggested that performance intentions can be predicted from attitude toward that behavior. Similarly, the Theory of Reasoned Action (TRA) postulates that individual intentions are a function of the attitude toward the assessed behavior (Ajzen & Fishbein, 1973). Furthermore, Ajzen suggested that attitude may be considered a predictor of a person's behavior toward usage. Over the last three decades, considerable research has further developed and expanded this basic theory to include attitude toward the utilization of Information Technology (IT) (McFarland & Hamilton, 2006; Noyes & Garland, 2006; Roca et al., 2006).

Davis (1989) developed the classical Technology Acceptance Model (TAM), a modification of TRA. TAM was postulated to explain computer usage behavior, specifying a causal link between perceive usefulness and perceived ease of use, and attitude toward computers (Davis et al., 1989). Through perceived usefulness and perceived ease of use, TAM was linked to the Social Cognitive Theory (Davis & Wiedenbeck, 2001). Shaft, Sharfman, and Wu (2004) suggested that TAM "focuses on an individual's acceptance of a particular Information System (IS) rather than assessing a general trait" (p. 664). Huang and Liaw (2005) and Teo (2006) applied TRA, suggested that computer attitudes play an influential role in determining the extent to which students use the computer as a learning tool and predicting persistence of future use.

Liaw (2002) concluded that users' positive attitude toward computers plays a critical role in persistent use of the technology. Additionally, Coffin and MacIntyre (1999) suggested that attitude plays a key role in predicting user acceptance. Sanders and Morrison-Shetlar (2001) agreed that attitudes towards the e-learning system play a significant influencing role in persistent use of the technology. Liaw, in an investigation of computers and Internet usage, suggested that persistence in Internet usage was more strongly affected by attitudes toward computers than by attitudes toward the Internet. Based upon TRA, Jawahar and Elango (2001) suggested that users' attitude toward computers contributes to user performance in specific goal attainment. They additionally postulated that attitude toward computer should relate to persistence of use.

Garland and Noyes (2004) reported that computer experience is a limited predictor of positive attitude toward computers. In an attempt to delineate the principal components contributing to attitude toward computers, scholars have researched the attitude of various populations and have found computer experience to be a limiting predictor of positive attitude toward computers (Masiello et al., 2005; Smith & Oosthuizen, 2005; Roussos, 2007). However, Lee, Cheung, and Chen (2005) found that attitude has a significant impact on students' persistence.

To assess users' attitudes, multiple computer attitude surveys have been developed. Many of the historic surveys, while Likert-based, were constructed of many questions. For example, the scales for attitudes about computers proposed by Zoltan and Chapanis (1982) and for computer self-efficacy by Young (2000) contained 64 and 48 questions, respectively. Hinkin (1995) suggested that longer surveys may increase participant fatigue which could lead to response bias. Surveys using the Computer Attitude Scale of Gressard and Loyd (1986) reportedly measured four separate components of attitude toward computers. By contrast, the survey of Reece and Gable (1982) was designed to measure attitude toward computers from within a specific study population. These instrument issues led Shaft et al. (2004) to develop the Attitude Towards Computers Instrument (ATCI). Shaft et al. recommended their 8-question Likert-type instrument as a simplified attitude toward computers survey for IS researchers as ATCI can be analyzed along the main construct of attitude toward computers. ATCI was designed and validated to be utilized in the assessment of attitude toward computers in a wide range of research settings (Shaft et al.). Shaft et al. reported acceptable internal consistency and reliability (Cronbach's α greater than .76) and stability over time for the ATCI. Additionally, they suggested that ATCI may aid researchers in the development of theories and models assessing the persistence of use of information technologies. Indeed, Shaft et al. concluded that measuring and quantifying users' attitude toward computers "is a key component to understanding user's acceptance and satisfaction with computer-based information systems" (p. 661).

2.4. Intrinsic and extrinsic motivation

Davis (1989) postulated TAM to explain attitude towards computers in terms of a causal link between perceived usefulness and perceived ease of use. Users' extrinsic motivation and intrinsic motivation have been found to contribute to persistent use of computers (Moon & Kim, 2001; Venkatesh & Davis, 2000). Intrinsic motivation is expressed when individuals engage in an activity for the self-satisfaction of the activity without external reward or confirmation. Individuals are extrinsically motivated when they participate in an activity or task to attain some separable identifiable outcome — a reward. Conversely, extrinsic motivation is expressed when tangible and intangible rewards are present (Vallerand et al., 1992). Shang, Chen, and Shen (2005) suggested that persistent use of computer technology in online environments may possess intrinsic and extrinsic components. Furthermore, many scholars have acknowledged that measuring and improving intrinsic and extrinsic motivation constructs may improve persistence in e-learning courses (Lee et al., 2005; Moon & Kim, 2001; Roca et al., 2006; Vallerand, 2004).

Individuals are intrinsically motivated when they engage in an activity for the inherent self-satisfaction of the activity rather than some external reward or confirmation (Ryan & Deci, 1999). Consequently, Roca et al. (2006) suggested that users' intention to continue to utilize an e-learning system may be determined by intrinsic motivation received from the experience. In a study of 172 respondents, Roca et al. extended TAM to include components of Theory of Planned Behavior (TPB) and Expectancy Disconfirmation Theory (EDT). TPB, an extension of TRA,

posits that intention is jointly determined by attitude and subjective norm, similar to TRA, with the addition of perceived control (Ajzen, 1991). Furthermore, Shang et al. (2005) suggested that intrinsic motivation in computer usage may lead to increased technology acceptance. EDT is used to explain motivation to persist in use of IS (Oliver, 1980, Chiu et al., 2005). EDT posits that persistence in use can be explained by a causal contribution between perceived performance, perceived disconfirmation and satisfaction (Chiu et al.). Furthermore, Roca et al. suggested that e-learning persistence is determined by satisfaction in the e-learning system. Their evaluation reported that intrinsic and extrinsic motivations were major contributors to the satisfaction construct. Lee et al. (2005) supported the contribution of an intrinsic motivational construct in the persistence of use of e-learning.

In an evaluation of college students' intrinsic and extrinsic motivation in traditional course structures, Lin, McKeachie, and Kim (2002) and Yang, Tsai, Kim, Cho, and Laffey (2006) confirmed that students who are more intrinsically motivated will persist longer in a course. Kim et al. found that college students who were highly intrinsically motivated achieved higher grades. Based on their analysis of 13 traditional college classes, they suggested that persistence in learning may best be achieved by a moderate level of extrinsic motivation coupled with a high degree of intrinsic motivation. Ryan and Deci (1999) suggested that most of the activities that individuals participate in are the result of intrinsic motivation rather than extrinsic motivation. They also conjectured that "intrinsic motivation results in high-quality learning" (p. 55). However, they also suggested that intrinsic motivation decreases with age as individuals assume more responsibility. Lepper, Corpus, and Iyengar (2005) supported the decline of intrinsic motivation as age increases. While many of the activities and courses related to academic work are in themselves not intrinsically motivating, researchers have postulated that extrinsic motivational constructs must be evident to motivate for persistence in the course (Lin et al.; Ryan & Deci).

In traditional course structures, Lin et al. (2002) found that college students who are more extrinsically motivated for high grades and who are high in intrinsic motivation achieve higher grades and persist in the course. Furthermore, Lee et al. (2005) suggested that both intrinsic and extrinsic motivation impact persistence of use. Their findings indicate that extrinsic motivation contributes a direct effect on intention to persist and to reuse the technology. Specifically in an investigation of college student-athletes, Rockafellow and Saules (2006) found that extrinsically motivated participants display higher rates persistence of substance use than do their intrinsically motivated counterparts. They suggested that intrinsic and extrinsic motivation should be measured in evaluating the persistence of activities involving college student-athletes.

Specifically relating to Information Systems (IS), Teo, Lim, and Lai (1999) suggested that additional research should be conducted to further investigate the contribution of intrinsic motivation to persistence of use of information technologies. Therefore, an intrinsic motivational assessment in e-learning courses may provide an improved understanding of persistence in a course (Schwartz & Waterman, 2006; Yang et al., 2006). Teo et al. also reported that extrinsic motivational constructs were found to contribute directly and more significantly to prediction of Internet usage than were the intrinsic motivational constructs. SDT has been used to explain external control and influence through extrinsic motivation (Ryan & Deci, 1999). Consequently, college students who are more extrinsically motivated and who are high in intrinsic motivation were reported to achieve higher grades and persisting in the course. Both intrinsic and extrinsic academic motivations have been shown to have a consistently strong effect on persistence in e-learning (Thompson, Vivien, & Raye, 1999).

Simons, Van Rheenen, and Convington (1999) researched academic motivation of student-athletes. They found that relative commitment to athletics plays an important role in the academic motivation of both male and female athletes. They suggested that intrinsic motivation toward athletics may be a contributing factor in academic motivation. Vallerand's (2004) overview of intrinsic and extrinsic motivation of athletes reported that increasing intrinsic motivation enhances persistence toward goal attainment. Athletes on scholarship tend to receive rewards and recognition that are more extrinsic, which in turn may lead to greater effort directed toward athletics and less effort and motivation toward academics (Simons et al.). Additionally, Vallerand suggested that the role of extrinsic and intrinsic motivation in producing outcomes in athletes is well established. Vallerand, furthermore, stated that "the more self-determined the motivation, the more positive the outcomes" (p. 433).

The Academic Motivation Scale (AMS), created and validated by Vallerand et al. (1992), has been utilized as a tool for the collection of data on intrinsic and extrinsic motivation. AMS is the English version of Eschelle de Motivation en Education (Vallerand et al.). Eschelle de Motivation en Education, based on self-determination theory, has been used in multiple empirical studies, each reporting acceptable validity and reliability (Cokley, 2000; Fortier, Vallerand, & Guay, 1995; Guay, Mageau, & Vallerand, 2003). Fairchild, Horst, and Finney (2005) provided updated validity evidence for the AMS, finding reasonable internal consistency for each of the subscales. Their study of 1406 college-students provided validity in the assessment and evaluation of intrinsic and extrinsic motivational constructs. All Cronbach's α reported greater than .77 across the seven subscales of AMS (Fairchild et al.; Grouzet, Otis, & Pelletier, 2006).

2.5. Perceived satisfaction with the e-learning system

Users' perceived satisfaction with the e-learning system is an active research area in the understanding of the overall user experience with technology (Alder & Ambrose, 2005; Jawahar & Elango, 2001; Lin, 2006). Doll and Torkzadeh (1988) introduced a measure of End-User Computing Satisfaction (EUCS). This classical work in EUCS has formed the basis for much of the modern IS research in user satisfaction. They proposed an easy-to-use Likert-based instrument. EUCS focused on satisfaction perceived from interaction and ease of use with a specific application in both academic research and practical settings. They provided adequate reliability and validity over a variety of applications and settings. EUCS should enable IS researchers to assess end-user perceived satisfaction and various independent variables that may provide additional insights into the further understanding of the potential contributions between the independent and dependent variables (Doll & Torkzadeh).

Based upon the classical work of Doll and Torkzadeh (1988) on EUCS, scholars have evaluated perceived satisfaction and developed tools to measure users' perceived satisfaction specifically from online experiences, especially e-learning courses (Chiu et al., 2005). Due to the low persistence rate of students in e-learning courses, Masiello et al. (2005) postulated that perceived satisfaction may be a key indicator in students' persistence in e-learning courses. Ong, Lai, and Wang (2004) found that lack of perceived satisfaction was a contributing factor affecting the overall low rate of persistence. Levy (2007) maintained that non-persistent students expressed lower rates of perceived satisfaction than the persistent students. Additionally, Biner, Dean, and Mellinger (1994) reported that students displaying higher levels of perceived satisfaction are more likely to persist and to take additional e-learning courses. Likewise, Chiu et al. found that persistence intention in e-learning is partially determined by perceived satisfaction.

McFarland and Hamilton (2006) reported that academic performance is not significantly different when comparing traditional courses to e-learning courses. They also did not find significant differences in perceived satisfaction with the e-learning courses. They cautioned, however, that the results of perceived satisfaction might not be extended to other populations or course organizations. This was due to the traditional and e-learning courses they studied being similar in nature and content. According to McFarland and Hamilton, the study population (senior-level management information systems

students) was comprised of "savvy technology students with sufficient computer knowledge to remove any potential technology hurdle that might be experienced by non-computing students" (p. 30). Thus, McFarland and Hamilton recommended further research with different course structures and different study populations.

Specifically, related to college and university e-learning systems, Richardson and Swan (2003) and Masiello et al. (2005) recommended that faculty and administrators pay special attention to the perceived satisfaction levels of their students. Levy (2007) evaluated 133 college students who had enrolled in e-learning courses. Levy's 7-item Likert-type survey, based on Bures, Abrami, and Amundsen's (2000) evaluation of e-learning in a university environment, presents questions in both positive and negative forms. Based on the results of a self-completed online survey, Levy concluded that perceived e-learning satisfaction is a key factor in persistence. To increase retention in their e-learning courses, Sachs and Hale (2003) suggested that colleges and universities focus on student satisfaction. Specifically for college student-athletes, Hollis (2001) suggested that users' perceived satisfaction was an important component in the development and persistent utilization of academic support services.

Wang (2003) developed the E-Learner Satisfaction (ELS) model and instrument for measuring e-learning students' perceived satisfaction, containing four major contributing components: learner interface, learning community, content, and personalization. Wang suggested that ELS could be utilized by other researchers to test e-learning-related theories, as long as a user's perceived satisfaction component is to be evaluated. Subsequently, Levy (2007) developed a 7-item survey in his assessment of college students' perceived satisfaction with the e-learning system.

Shee and Wang (2008) have additionally applied a multi-criteria decision-making technique as a basis for determination of an e-learning student's perceived satisfaction with the development of Web-based e-learning systems. They determined that utilization of e-learners' perceived satisfaction perspectives in the development of e-learning systems increases users' acceptance and planned persistence of use. Siritongthaworn and Krairit (2006) focused on four dimensions of perceived satisfaction for e-learning: delivery method, communication facilitation, system operation, and content. They found that each of these dimensions played a role in influencing e-learners' overall perceived satisfaction. In studies involving college students (Shih, 2006) and adults (Konradt, Christophersen, & Schaffer-Kuelz, 2006), researchers reported that perceived satisfaction is a critical component in persistence of use of information technologies.

Researchers such as Devaraj, Fan, and Kohli (2002), Chiu et al. (2005), and Roca et al. (2006) proposed additional constructs or models in an attempt to understand and predict students' persistence in e-learning courses. Devaraj et al. suggested the addition of a perceived satisfaction to TAM. Roca et al. suggested the addition of perceived performance and perceived quality constructs to TAM. Chiu et al. employed a decomposed EDT to examine cognitive beliefs that influence persistence of students in e-learning courses. Originally, EDT, as developed by Oliver (1980), was a marketing theory used to explain customers' perceived satisfaction and intent to repurchase. EDT has been used in systems research "to study IS continuance intention, electronic commerce service continuance, and Web customer satisfaction" (Chiu et al., p. 401). Wixom and Todd (2005) proposed a satisfaction construct as a precursor for TAM. They suggested that system quality, as defined by users' perceived satisfaction, contributes to ease of use in TAM. They also conjectured that the object-based belief of system quality forms the foundation for the object-based attitude of perceived satisfaction.

2.6. Previous academic performance measures

Morris et al. (2005) developed a classification rule to predict student persistence in e-learning in general education courses. They found that previous high school GPA and SAT mathematics scores are important predictors for persistence in e-learning courses. Previously, Diaz (2002) reported similar findings by suggesting that persistent e-learners exhibit a higher GPA than non-persistent e-learners. In a study designed to predict the academic success of college student-athletes, Sedlacek and Adams-Gaston (1992) analyzed SAT scores and the Noncognitive Questionnaire (NCQ) data from 105 revenue- and nonrevenue-producing sports at a NCAA Division I university. NCQ has shown reliability with Cronbach's α of greater than .70 in predicting of semester end grades. Sedlacek and Adams-Gaston indicated that while NCQ results were very significant in predicting end-of-semester grades, SAT score was not an accurate predictor of end-of-semester grades; however, Simons et al. (1999) reported that SAT may be viewed as a long-term predictor of persistence and of overall academic success. In a more recent study in e-learning, Wojciechowski and Palmer (2005) reported that composite ACT scores did not show a significant correlation with grades in the persistent population; however a correlation with non-persistent students was observed. They additionally reported that the previous GPA correlated very well with the persistent students' final e-learning course grade.

Simons et al. (1999) in an analysis of cognitive factors of college student-athletes and motivational types found that athletic-academic commitment was negatively correlated with historic GPA. Across all motivational types, the more committed the athlete was to athletics and the less to academics, the lower the overall GPA. Furthermore, Simons et al. postulated that higher GPA scores may predict persistence in both athletics and academics. In a follow-up study involving college student-athletes, Simons and Van Rheenen (2000) maintained that both GPA and SAT scores reported high correlations with persistence in academic achievement. Furthermore, they found that the well-prepared (as indicated by higher GPA and SAT score) college student-athlete "appears to be able to respond to the increased demands and transfer the qualities of hard work, discipline, and perseverance" into his or her academic life (p. 178).

Predictors of academic success in traditional courses for college student-athletes, as identified by Gaston-Gayles (2005), were high school GPA, class rank, standardized test scores (SAT), and parental education level. In a longitudinal investigation of persistence in traditional college enrollments, Ishitani and DesJardins (2003) empirically assessed a predictive model. Statistically significant constructs in their prediction of persistence of the analyzed population were: family income, mother's educational attainment, self-educational aspiration, first-year GPA, and SAT scores. They reported that students with higher GPAs and higher SAT scores were more likely to persist over the 5-year study timeframe. Furthermore, Young and Sowa (1992) reported that high school GPA may be one of the most accurate predictors of academic success, as measured by college GPA, for minority athletes. Specifically in e-learning systems, Parker (2003) reported that students with higher high school math GPAs were significantly more persistent in e-learning courses than their counterparts with lower high school math GPAs.

3. Research questions and methodology

3.1. Research questions

From literature review it is evident that constructs comprising a conceptual model, as shown in Fig. 1, may be potential factors in the prediction of persistence of college student-athletes enrolled in e-learning courses. This research attempted to validate the predictive model by proposing and assessing four research questions. The following text outlines the literature that suggests the need of each research questions followed by the proposed research question.

Vuorela and Nummemaa (2004) reported that in e-learning systems, students' attitude toward computers "did not predict the activity in the learning environment" (p. 764). However, participants

interpreted the "learning environment more negatively" (Vuorela & Nummemaa, p. 773). Therefore, in e-learning systems, students' attitude toward computers may contribute to a lack of persistence. Liaw (2002) concluded that a user's positive attitude toward computers plays a critical role in persistence. Roberts and Henderson (2000) defined attitude toward computers "as an individual's overall affective reaction to using a system" (p. 455). Smith and Oosthuizen (2005) suggested that a composite definition of attitude, computer anxiety, computer confidence, and computer liking may be applied to IS research in analyzing a user's attitude toward computers. Thus, the first research question is:

RQ1: What is the contribution of attitude toward computers to the persistence of college student-athletes enrolled in e-learning courses?

Moon and Kim (2001) and Venkatesh and Davis (2000) suggested that extrinsic and intrinsic motivation contribute to the user's positive experience with computers. According to Ryan and Deci (1999), extrinsic motivation is expressed when individuals participate in an activity "because it leads to a separable outcome" (p. 55). Extrinsically motivated actions result when the user has an expectation of an external reward. Intrinsic motivation is expressed by "doing something because it [is] inherently interesting or enjoyable" (Ryan & Deci, p. 55). Thus, the second research question proposed by this study is:

RQ2: What is the contribution of intrinsic and extrinsic academic motivation to the persistence of college student-athletes enrolled in e-learning courses?

Gaston-Gayles (2005) suggested that research on academic motivation of the college student-athlete has received limited attention. Roca et al. (2006) and Levy (2007) suggested that persistence of students in e-learning courses is partially determined by perceived satisfaction with the e-learning system. Roca et al. investigated students' continuance intentions in e-learning courses, finding that a student's intention to continue to utilize an e-learning system could be determined by expressed satisfaction with their experience. Additionally, Hollis (2001) reported that successful academic support services for college student-athletes display a high degree of perceived satisfaction. Thus, the third research question is:

RQ3: What is the contribution of perceived satisfaction with the e-learning system to the persistence of college student-athletes enrolled in e-learning courses?

Morgan (2005) reported that previous academic performance measures such as high school GPA, SAT composite score, gender, and academic classification accounted for 55% of the variance in the college student-athletes' cumulative college GPA. In e-learning courses, Parker (2003) reported that higher math scores related well with students' persistence. Young and Sowa (1992) reported that high school GPA is one of the most accurate predictors of academic success for minority student-athletes. Thus, the fourth research question proposed by this study is:

RQ4: What is the contribution is of students' previous academic performance (high school GPA and SAT score) to the persistence of college student-athletes enrolled in e-learning courses?

3.2. Methodology, sample, and instruments

A college student-athlete, for the purposes of this study, is a student who is identified as a participant in any of the NAIA intercollegiate team sports. The college student-athlete participants reported data concerning their collegiate sport, gender, number of e-learning courses previously taken, and the number of e-learning courses presently enrolled, in addition to high school GPA and SAT score. During the period of data collection, the college had a population of over 450 college student-athletes.

This research collected data using a Likert-type survey instrument twice during the term (i.e., at the beginning of the term and at the end of the term) from college student-athletes who completed e-learning courses and those who did not complete e-learning courses at small liberal arts college with 10 sanctioned sports. The e-learning courses investigated were core curriculum requirements for all students. Each e-learning course required an initial meeting with students and faculty and a proctored final exam; the survey instrument was completed twice, once during each of these attended on-campus sessions.

Students' attitude toward computers was measured by Shaft et al.'s (2004) ATCI. The ATCI is an 8-item, 5-point Likert-type survey instrument that requires the respondents to select a descriptive adjective describing their view of computers. The ATCI has shown to have high levels of internal reliability, with a reported Cronbach's α coefficient of greater than .76 (Shaft et al.). ATCI queries respondents to select from a range of one to five descriptive adjectives representing their attitude toward computers.

Students' intrinsic and extrinsic academic motivation was measured utilizing the AMS (Vallerand et al., 1992; Grouzet et al., 2006). AMS is a 28-item, 5-point Likert-type survey instrument that measures academic motivation in terms of intrinsic, extrinsic, and amotivational subscales (Vallerand et al.). Fairchild et al. (2005) and Grouzet et al. reported sufficient validity of AMS in both longitudinal and cross-gender analysis for effective utilization of the survey instrument.

Students' perceived satisfaction with an e-learning system was measured based on a validated user's perceived satisfaction instrument (Levy, 2007). A 6-item, 5-point Likert-type survey instrument was employed to collect participant responses on perceived satisfaction (Roca et al., 2006). The survey instrument was adapted from Levy's survey instrument. Students' previous academic performance measures (high school GPA and SAT score) were reported by study participants. In addition, the participants reported their collegiate sport, gender, number of e-learning courses previously taken, and the number of e-learning courses presently enrolled in. Such demographics factors were collected through a single item measure for each.

The survey instrument was sent to a total of 201 college student-athletes enrolled in one of six e-learning courses, twice — at the beginning of term and at the end of term. This resulted in 146 (72.6%) usable surveys being received from the study participants initially enrolled, at beginning of the term, in the e-learning courses. End-of-term data consisted of 114 (56.7%) usable survey submissions from the participants who successfully completed the e-learning courses, and 32 (15.9%) usable survey submissions from the participants who did not successfully complete the e-learning courses (i.e., the non-persistent college student-athletes). As a result of Mahalanobis distance analysis one case was identified as a multivariate outlier; therefore, this case was deleted from further analysis. Therefore, following the pre-analysis data screening, a total of 290 usable records for 145 students were obtained altogether (145 responses or 72.1%), which includes data collected from each student at the beginning of the term and the end of the term.

4. Results

4.1. Demographics analysis

The majority of the respondents were male (111 or 76.6%), with the majority of the college athletes enrolled as freshmen (121 or 83.4%). The majority of the respondents were in the age range of 19 to 24. Close to half of the respondents were football players (63 or 43.5%) while less than one fifth consisted of track and field athletes (24 or 16.5%). A third of the respondents had not taken any e-learning course in the past (53 or 36.6%) but more than half reported taking one e-learning course in the past (92 or 63.4%). Only a minority of the respondents reported taking two or more e-learning courses (5 or 3.4%). Table 1 depicts the frequencies and percentages of the demographics data collected. The mean and standard deviation for high school GPA and SAT scores are presented in Table 1 as well. High school GPAs of the respondents ranged from 2.00 to 3.96 (M = 3.17; SD = .42). SAT scores ranged from 750 to 1190; mean SAT for the sample was 967.69 (SD = 103.31).

Table 1
Demographics of study participants (N=145)

Item	Frequency	Percentage (%)
Gender		
Male	111	76.6%
Female	34	23.4%
Age		
18 or under	12	8.4%
19–24	131	90.3%
25–29	2	1.2%
Academic level		
Freshman	121	83.4%
Sophomore	12	8.3%
Junior	6	4.1%
Senior	6	4.1%
Number of previous e-learning courses taken		
None, this was my first	53	36.5%
1	87	60.0%
2 or more	5	3.4%
E-learning course persistence		
Persisters	114	78.6%
Non-persisters	31	21.4%
Previous academic performance item	Mean	Stand. Div.
High school GPA	3.17	.42
SAT score	967.69	103.31

4.2. Descriptive statistics for study variables

The findings suggest that the participants had a relatively neutral attitude toward computers (M=2.72; SD=.73), relatively moderate intrinsic motivation (M=2.86; SD=.98), relatively higher than moderate extrinsic motivation (M=3.62; SD=.91), and relatively moderate satisfaction (M=2.93; SD=.66). The majority of the responding college student-athletes persisted and completed their e-learning course (114 or 78.6%). The attitude towards computer measure had good reliability (Cronbach's α=.83). The intrinsic motivation sub-measure had high reliability (Cronbach's α=.91) while the extrinsic motivation sub-measure had good reliability (Cronbach's α=.88). Additionally, the satisfaction measure had acceptable reliability (Cronbach's α=.73). According to Hill and Lewicki (2006), reliable measures should demonstrate Cronbach's α above .70. Thus, all construct measures in this study were acceptable and reliable with Cronbach's α above .70.

An ordinal logistic regression (OLR) analysis with a *logit* link function was conducted to determine whether the independent variables of attitude towards computers, perceived satisfaction, intrinsic motivation, extrinsic motivation, and previous academic performance (high school GPA and SAT score) would significantly predict the dependent variable, namely persistence in e-learning courses. The results show that the proposed model correctly predicted e-learning persistence in course 81.4% of the times. The overall model for predicting persistence in e-learning course reported to be significant with a −2 Log Likelihood=119.204, χ^2 (5)=31.288, p<.0001. Table 2 depicts the results of the OLR model.

The findings for RQ1 (i.e., *What is the contribution of attitude toward computers to the persistence of college student-athletes enrolled in e-learning courses?*) indicate that attitude towards computers did not significantly predict the likelihood of e-learning persistence (χ^2 (1)=1.580, p=.209). Likewise, the findings for RQ2 (i.e., *What is the contribution of intrinsic and extrinsic motivation to the persistence of college student-athletes enrolled in e-learning courses?*) reveal that intrinsic motivation did not significantly predict the odds of e-learning persistence (χ^2 (1)=.303, p=.582) nor extrinsic motivation, but did significantly predict the odds of e-learning persistence (χ^2 (1)=.676, p=.411).

Similarly, the findings for RQ3 (i.e., *What is the contribution of perceived satisfaction with the e-learning system to the persistence of college student-athletes enrolled in e-learning courses?*) indicate that satisfaction with the e-learning system did not significantly predict the likelihood of e-learning persistence (χ^2 (1)=.011, p=.917). While the findings for RQ4 (i.e., *What is the contribution of previous academic performance (high school GPA and SAT score) to the persistence of college student-athletes enrolled in e-learning courses?*) suggest that high school GPA was the only variable in the model that significantly predicted e-learning persistence (χ^2 (1)=17.108, p<.0001). These significant results indicate that for every unit increase in the student-athletes' GPA, the odds of e-learning persistence increased by over 36%. SAT, however, did not significantly predict the odds of e-learning persistence (χ^2 (1)=1.127, p=.288).

Table 2
OLR analysis (N=290)

Variable	*B*	SE	χ^2	*df*	Sig.	OR
Attitude towards computers	−.50	.40	1.580	1	.209	.61
Intrinsic motivation	.23	.43	.303	1	.582	.71
Extrinsic motivation	−.35	.42	.676	1	.411	1.26
Satisfaction	.03	.26	.011	1	.917	1.03
GPA	3.59	.87	17.108	1	.000**	36.06
SAT	−.00	.00	1.127	1	.288	1.00

** p<.001.

The analysis revealed that males and females had similar attitudes towards computers (t (143)=.926, p=.356). Both groups also had similar satisfaction (t (143)=1.871, p=.063). Females, however, had significantly higher intrinsic motivation (M=2.88) than males (M=2.31; t (143)=3.069, p=.003). Females (M=3.76) also had significantly higher extrinsic motivation than males (M=2.99; t (143)=4.649, p<.0001). Further, females had significantly higher high school GPAs (M=3.42) than males (M=3.09; t (143)=4.203, p<.0001). In addition, females had significantly higher SAT scores (M=1006.47) than males (M=955.81; t (143)=2.549, p=.012).

Table 3 depicts the results of the ANOVA for type of sports. The findings reveal that attitude towards computers, extrinsic motivation, satisfaction, high school GPA, and SAT scores varied significantly across type of sport. Intrinsic motivation, however, did not vary significantly across type of sport. Independent t-tests were performed, using the Scheffe adjusted critical t-value of 9.458, pairing attitude towards computers, perceived satisfaction with the e-learning, high school GPA, SAT scores, intrinsic motivation, and extrinsic motivation with each of the sport types. Analysis of the results indicated that none of the pairwise comparisons were statistically significant.

5. Discussion and conclusions

5.1. Discussion

This study investigated several constructs and prior academic performance variables that were hypothesized as contributors to the persistence of student-athletes attending e-learning courses. Specifically, attitude towards computers, perceived satisfaction, intrinsic

Table 3
ANOVA results for type of sport

Variable	*df*	*F*	Sig.
Between groups			
Attitude towards computers	9	3.400	.001**
Intrinsic motivation	9	1.405	.192
Extrinsic motivation	9	2.350	.017*
Satisfaction	9	2.155	.029*
GPA	9	3.151	.002**
SAT	9	2.759	.005**
Within groups	135		

* p<.05.
** p<.01.

motivation, extrinsic motivation, and previous academic performance (high school GPA and SAT score) were investigated for their contribution to persistence in e-learning courses. Data were collected at the beginning of the term and end of the term from a group of student-athletes attending e-learning courses in a small NAIA college in the southeastern United States. Records included two submissions (start-of-term and end-of-term) from each of the 145 participants. Results were analyzed using a regression model, OLR, to investigate the significance of each of the aforementioned constructs and previous academic performance when predicting college student-athletes' persistence in e-learning courses. The investigation included six e-learning courses taught by three instructors in the subjects of introduction to computer technologies and basic mathematics. These courses were delivered on SCHOLAR, a local implementation of Jenzabar®'s Internet Campus Solution.

5.2. Summary of the results

This study included quantitative survey-based assessments done twice during one term to see the implications of the measured constructs and variables for persistence in e-learning courses. The results indicated good reliability for the assessed constructs. Moreover, results of the OLR analysis indicated that the proposed model was capable of predicting college student-athlete persistence 81.4% of the time. Prior studies concluded that attitude toward computers contributes significantly to persistence in e-learning (Coffin & MacIntyre, 1999; Jawahar & Elango, 2001; Liaw, 2002). However, results of the data collected in this research found that attitude towards computer was not a significant predictor for the likelihood of persistence of the assessed college student-athletes enrolled in e-learning courses.

Previous studies such as Teo et al. (1999) found that persistence in Internet use is significantly related to intrinsic motivation. Additionally, Ryan and Deci (1999) postulated that extrinsic motivation play a role in persistence in e-learning courses. Furthermore, Lin et al. (2002) suggested that persistence in learning may be achieved by a moderate level of extrinsic motivation coupled with a high degree intrinsic motivation. However, results of this study indicate that intrinsic and extrinsic motivation are not significant contributors to predicting the likelihood of persistence of the assessed college student-athletes enrolled in e-learning courses. Therefore, in light of such mixed results, it appears that additional research is warranted on the contribution of intrinsic and extrinsic motivation to persistence in e-learning courses.

Levy (2007) found that non-persistent students expressed lower rates of perceived satisfaction than persistent students. Additionally, Biner et al. (1994) reported that students displaying higher levels of perceived satisfaction are more likely to persist in e-learning courses. However, results of this study indicate that perceived satisfaction with e-learning systems is not a significant contributor to predicting the likelihood of persistence of the assessed college student-athletes enrolled in e-learning courses. Therefore, with these findings also it appears that additional research is still warranted on the contribution of perceived satisfaction with e-learning systems to persistence of college student-athletes.

The results of this study also indicate that SAT scores are not a significant predictor of e-learning course persistence. However, high school GPA was found to be a significant predictor of persistence of the assessed college student-athletes enrolled in e-learning courses. This, in part, supports the findings of Morris et al. (2005) that previous high school GPA and SAT mathematics scores are important predictors for persistence in e-learning courses. Additionally, these results somewhat correspond to the results of Parker (2003), which indicated that students with higher high school math GPAs are significantly more persistent in e-learning courses than their counterparts with lower high school math GPAs.

5.3. Limitations and suggestions for future research

Five limitations of this research have been identified. The first limitation of this study is that the sample size is relatively small and is comprised of college student-athletes at one institution. Additional research is suggested with a larger population of college student-athletes enrolled in e-learning courses. The second limitation of this study is that almost 95% of the respondents reported that they had taken one or no e-learning course in the past. Terrell (2005) has suggested that students who are "organized, steady, and linear" (p. 213) are more likely to persist in e-learning courses. Thus, additional research may be suggested to include students who have had ample experience in adapting their learning styles to e-learning systems. The third limitation of this study is that the sample was comprised of 86.9% freshmen. Although the majority of student-athletes in most collages are freshmen, additional longitudinal research is suggested in which the overall college persistence can be compared to the persistence in e-learning courses of a specified population of college student-athletes. The fourth limitation of this study is the self-selection of the e-learning courses by the college student-athletes. It may be that due to this self-selection nature, a higher percentage of college student-athletes persisted in the courses. Thus, additional research may look at college student-athletes who are assigned to e-learning courses, and the antecedents that may contribute to the persistence of assigned rather than self-select students. The fifth limitation of this research is the use of only college student-athletes as study participants. Researchers should be cautious when generalizing the results of this study to persistence in e-learning of other identifiable populations of college students.

5.4. Implications and suggestions for future research

This research has several implications for research and practice. Specifically, researchers may find that the unique sample assessed in this study is important and may wish to pursue similar investigation with a larger sample from other NAIA institutions. Moreover, this research contributed to the body of knowledge with the development of an initial model that may be used for the prediction of persistence in e-learning courses within a defined population. Future research may want to validate the results found by this study to see if similar results may hold true for other unique types of student populations. Some examples of unique student populations may be: students with special needs or disabled students, first-generation students (those who are first in their family to attend college), and students attending e-learning courses in a revenue-producing program in the NCAA. Additionally, this research contributed to the body of knowledge by further highlighting the problem of persistence of students in e-learning courses in general and specifically the problem of a special population, such as college student-athletes enrolled in e-learning courses. Thus, future research may attempt to investigate additional constructs that appear to have a tendency toward prediction of students' persistence in e-learning courses. Moreover, since the majority of respondents were freshmen, longitudinal studies involving considerable larger populations of students who are more diverse across all academic levels and who are enrolled in e-learning courses may provide additional results to augment those found by this study. This research stream would allow identification and analysis of constructs and indicators that could predict students' persistence in e-learning courses.

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Appendix A. – Survey instrument

Part 1: About You!

1. Are you male or female? ☐ Male ☐ Female
2. What is your intercollegiate sport?
☐ None ☐ Baseball ☐ Basketball
☐ Cheerleading ☐ Football ☐ Golf
☐ Tennis ☐ Track & Field ☐ Volleyball
☐ Soccer ☐ Softball
3. How many e-learning courses have you previously taken?
☐ 0, this is my first e-learning course
☐ 1 more
☐ 2 more
☐ 3 more
☐ 4 more
☐ 5 or more
4. Excluding the current e-learning course you're attending, how many e-learning courses are you presently taking?
☐ 0, this is my only e-learning course this term
☐ 1 more this term
☐ 2 more this term
☐ 3 more this term
5. What is your academic level?
☐ Freshman
☐ Sophomore
☐ Junior
☐ Senior
6. What is your age? _____
7. What was your High School GPA? _____
8. What was your SAT score? _____

Part 2: Your attitude toward computers:
This section contains eight pairs of adjectives that may be used to describe your attitude toward computers. **While thinking of computers in general**, please mark the number that best represents your opinion.

I think that computers are…

1.					
restrain creativity	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐ enhance creativity
2.					
helpful	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐ harmful
3.					
enjoyable to use	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐ frustrating to use
4.					
boring	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐ intriguing
5.					
a sound investment	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐ a waste of money
6.					
difficult to use	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐ easy to use
7.					
non- threatening	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐ threatening
8.					
decrease productivity	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐ increase productivity

Part 3: Academic motivation

This section contains 5 ratings, corresponding to one of the reasons why you go to college. Please mark the descriptor that best represents your opinion. Think about

'Why I go to college'… as you respond to each statement

Does not correspond at all	Corresponds a little	Corresponds moderately	Corresponds a little	Corresponds exactly
1	**2**	**3**	**4**	**5**

1. Because with only a high-school degree I would not find a high-paying job later on.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2. Because I experience pleasure and satisfaction while learning new things.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3. Because I think that a college education will help me better prepare for the career I have chosen.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
4. For the intense feelings I experience when I am communicating my own ideas to others.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
5. Honestly, I don't know; I really feel that I am wasting my time in school.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
6. For the pleasure I experience while surpassing myself in my studies.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
7. To prove to myself that I am capable of competing my college degree.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
8. To obtain a more prestigious job later on.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
9. For the pleasure I experience when I discover new things never seen before.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
10. Because eventually it will enable me to enter the job market in a field that I like.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
11. For the pleasure that I experience when I read interesting authors.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
12. I once had good reasons for going to college; however, now I wonder whether I should continue.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
13. For the pleasure that I experience while I surpassing myself in one of my personal accomplishments.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
14. Because of the fact that when I succeed in college I feel important.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
15. Because I want to have "the good life" later on.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
16. For the pleasure that I experience in broadening my knowledge about subject which appeal to me.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
17. Because this will help me make a better choice regarding my career orientation.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
18. For the pleasure that I experience when I feel completely absorbed by what certain authors have written.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
19. I can't see why I go to college and frankly, I couldn't care less.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
20. For the satisfaction I feel when I am in the process of accomplishing difficult academic activities.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
21. To show myself that I am an intelligent person.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
22. To have a better salary later on.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
23. Because my studies allow me to continue to learn about many things that interest me.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
24. Because I believe that a few additional years of education will improve my competence as a worker.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

25. For the "high" feeling that I experience while reading about various interesting subjects.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
26. I don't know; I can't understand what I am doing in school.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
27. Because college allows me to experience a personal satisfaction in my quest for excellence in my studies.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
28. Because I want to show myself that I can succeed in my studies.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Part 4: Satisfaction with the e-learning system

This section asks you to rate your level of agreement, or disagreement, in the context of the e-learning course that you are presently taking:

Strongly disagree	Disagree	Neither agreen or disagree	Agree	Strongly agree
1	**2**	**3**	**4**	**5**

1. Using SCHOLAR was frustrating	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
2. Learning to use SCHOLAR was easy	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
3. Using SCHOLAR was an effective way to learn the course content	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
4. I will learn a great deal because of the use of SCHOLAR	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
5. SCHOLAR facilitates my work with other students in the course	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
6. I will not voluntarily take another course using SCHOLAR	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

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