Academic Persistence of Online Students in Higher Education Impacted by Student Progress Factors and Social Media

Anna H. Lint, Ph.D.
Trident University International
Anna.Lint@trident.edu

Abstract

This quantitative study evaluated and investigated the theoretical underpinnings of the Kember's (1995) student progress model that examines the direct or indirect effects of student persistence in online education by identifying the relationships between variables. The primary method of data collection in this study was a survey by exploring the relationships among variables. The sample population of this study was 169 students at a public community college in Maryland, USA. The logistic regression and multiple regression analysis were utilized to analyze the survey data. The findings of this study consistently indicated that negative external attribution was a significant factor for student persistence. GPA and academic integration were highly correlated to student persistence. Decreasing external attribution and encouraging higher GPA by increasing the academic integration help students continue to pursue their educational goals. The findings of this study deliver valuable implications in the current phenomena of the online environment regarding student persistence. Social media can be interpreted as the combination of external attribution and social integration of the Kember model. Social media may cause a distractor for academic focus, thus there is a need to increase academic input by increasing academic integration to mediate the interference. The findings of this study reflected student insights for student persistence, which may be a guideline and a reference for the leadership of online education institutes.

Introduction

In the fall of 2006, almost 3.5 million students (nearly 20 % of college students in the USA) were enrolled in at least one online course (Allen & Seaman, 2008; Griffin, 2008). This is compared to the more current information of over 6.7 million students (nearly 32 % of college students in the USA) who took at least one online course in the fall of 2011, which increases of 570,000 students from 2010 (Allen & Seaman, 2013). Online education programs contribute with minimal disruption to professional and personal environment since it is accessible through online delivery means (Myers, 2007). However, the highest rate of student dropout is between the first and second year of college (Barefoot, 2004). Individual student motivation is an important factor in evaluating persistence in successful completion of academic programs (Nichols, 2010). Therefore, online education institutes are required to reinforce reasons students must stay motivated in achieving educational goals (Strevy, 2009). The various theoretical models of student persistence were developed and verified the validity and reliability by Spady (1971), Tinto (1975), Bean & Metzner (1985), Kember (1995), Thomson (1999), Houle (2004), Harlow (2006), and Porta-Merida (2009), yet their results are slightly dissimilar in the magnitude of influence on student persistence. The purpose of this study is to identify the relationships among student progress factors, student performance, and student persistence through the perspective of Kember's (1995) model of student progress. This study examines the direct or indirect effects of student persistence on their successful completion of community college level online programs in Maryland, USA. Portions of this study were previously published in the Creative Education Journal.

Problem Statement and Research Questions

The socially integrated students are more likely to persist towards the completion of their degrees and are better retained (Senhouse, 2008). Between 20 and 50 % of online students drop out or fail, and the retention rate in online classes is 10 to 20 % lower than the retention rate in traditional class settings (Farmer, 2009; "Academic Retention Indicators," 2005; Wojciechowski & Palmer, 2005).

1. Is there a statistically significant relationship between student persistence and student progress factors (social integration, academic integration, external attribution, and academic incompatibility) within the online learning environment at the community college level?

2. Is there a statistically significant relationship between student persistence and student progress factors (social integration, academic integration, external attribution, and academic incompatibility) mediated by student performance defined by GPA within the online learning environment at the community college level?

Definition of Terms

Student progress factors:Kember (1995) identifies these four constructs (social integration, academic integration, external attribution, and academic incompatibility) as four elements of student progress:

Persistence: Three scores of student persistence will be measured by the intent to continually enroll in the upcoming semester and elements including the transfer to other institute and graduation. Hegedorn (2006) defined student persistence by including transfer to other college and graduation.

Social integration:The extent to which the employer, family, and friends support the student's decision to enroll and persist in the course and the extent to which they provide moral support (Houle, 2004).

Academic integration: The academic integration encompasses all elements of contact between an institution and the students (Kember, 1995).

External Attribution: The negative social integration. The external causes in the student's life such as insufficient time, work, family, friends, social networking, and unexpected events that might prevent the student from finishing a course or a plan of study (Kember, 1995).

Academic Incompatibility: The academic incompatibility and course performance will be defined as not receiving a passing grade in a course.

Literature Review

The purpose of this literature review is to evaluate theories and models relating to college level student persistence in online education. These themes are important because of the significance of these theories and models in the body of literature that predict student persistence in college level online courses. Diverse factors related to student persistence have been discussed by researchers in e-learning. Tinto (1999) argues that higher educational institutions need to retain existing students. Between 20 and 50 percent of online students drop their studies (Farmer, 2009; Wojciechowski & Palmer, 2005) and the highest rate of student withdrawal is in the first one or two years of college (Barefoot, 2004). Currently, many institutions offer online education by utilizing the modern technologies (Kay, 2009). A number of reasons for withdrawal are usually given by students (Nichols, 2010). Students claim the tools for the study of persistence are the effectiveness and quality of online courses (Perantoni, 2010) and student achievement (Davis, 2010).

With the increase in the number of online courses, there is also an increase in the number of students who do poorly in the courses or drop out, resulting in a waste of the student's time and finances (Angelino, Williams, & Natvig, 2007). Online education has become a mainstream educational methodology, thus it demands new and hybrid methods for evaluating its impact (Mandinach, 2005). Tinto's (1993) classic model of student departure provides a solid foundation of attrition. Students may complete programs at a higher rate if they feel a connection with their institutions (Heyman, 2010; Herbert, 2007; Soen & Davidovitch, 2008) and students who are socially integrated feel less isolated (Senhouse, 2008). Academic integration and social integration positively affect retention and academic integration positively influences a grade point average (Woosley, 2009). Due to an increasing appreciation of the internet environment, there are many diverse methods of social integration. Kord (2008) stresses the possible positive and negative influence of online social networking on college students' academic experiences, and which will continue to offer more traditional support to students through a less traditional medium (Heyman, 2010). The interaction with faculty and social networking with peers are important factors for academic success (Vuong, Brown-Welty, & Tracz, 2010). If students are kept engaged in their academic programs (Dizik, 2010), this elicits students' stronger positive opinions for e-learning environments (Lei & Gupta, 2010; Riffell and Sibley, 2005).

The grade point average (GPA) on student persistence is significantly related to continued enrollment (French et al. 2003) and student persistence (Porta-Merida, 2009). Higher levels of social integration are more likely to be associated with slightly lower GPAs than academic integration (Woosley, 2009), thus distraction from social networking may influence student GPA (Blashak, 2010). College GPA accounted for 25% of variance in predicting persistence (Davis, 2010; Weidman, 1985).

Theoretical Orientation and Conceptual Framework

Kember's (1995) student progress model is the fundamental theory used in this study. Kember et al. (1991) develop the Distance Education Student Progress (DESP) Inventory and Kember (1995) modifies his dropout model by connecting a model of student progress which encompasses student entry characteristics, social integration, academic integration, external attribution, and academic incompatibility. This study tests Kember's (1995) student progress model considering a strong integration environment and student background in association with student performance (GPA) and persistence (Figure 1). This conceptual framework shows the direction of the operational flow by presenting various paths among the variables in the model in an attempt to answer two research questions and show how the detected variables affect Student Persistence.
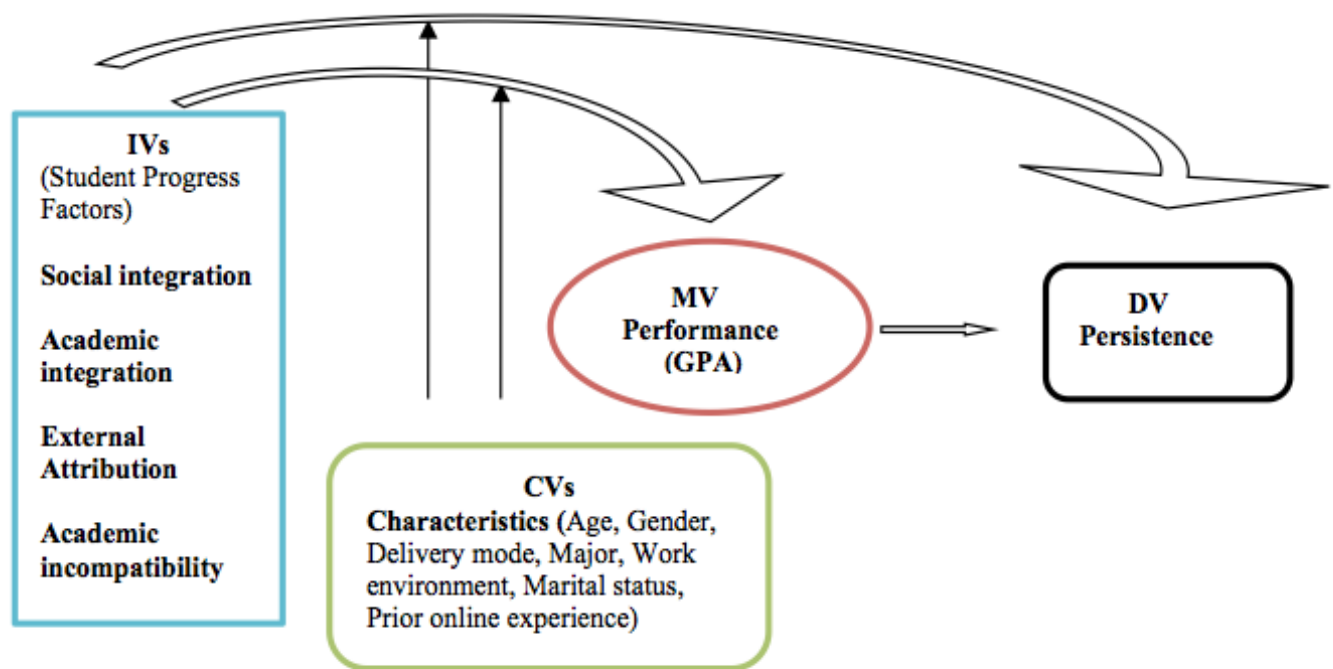

Figure 1. Conceptual Framework

Research Methodology

Research Design

The researcher exercised a post-positivist worldview to identify and assess the causes that influence outcomes (Creswell, 2009). The relationships among student perceptions (course performance, cost-benefit analysis, and student persistence, associated with student characteristics and learning styles) were explored.

Sample Population and Data Collection

The survey explored the relationship among student demographic characteristics, student perceptions (Distance Education Student Progress) refined into four factors, GPA, and student persistence at a public community college in Maryland to verify Kember's (1995) model in relation to this environment. The target participants were 800 community college students who were taking online or hybrid courses of the fall 2010 session from a public community college in Maryland. All 800 students were invited to take an online survey for this study. 169 of 800 students participated in the survey, which was 21.1 % return rate to the survey.

Students who responded to the invitation and the consent were surveyed. Students' privacy was carefully protected and the students' name and identification were not asked. The online survey was operated via a virtual platform. The survey link was sent to 800 students via the Survey Monkey website and the link for the survey was uniquely tied to each individual student. This allowed customization of the survey approach to individual participants, such as being able to send a second and final email to students who did not participate on the first

and second survey attempt. The data were logged and respondents who did not meet the criteria for the study were removed for consistency and accuracy. The dataset was exported to Microsoft Excel and filtered to ensure a good fit against the defined research questions. Finally, the refined dataset was imported into a Statistical Package for the Social Science (SPSS) 16.0 database to allow calculation of the mean and standard deviation for each variable and create correlation matrices.

A survey comprised of three sections (Appendix A of Lint, 2011) was used as an instrument to answer the research questions to support definition of the hypotheses in this study. In section I, variables of age, gender, major, delivery mode, work environment, marital status, e-learning experience, and learning styles (items 1-8) were explored. *Student Performance* (GPA), *Cost-Benefit analysis* (items 10-12), and *Student Persistence* (items 13, 14, &16) measured by intent to continue enrollment or transfer or graduation were investigated in section II. The intent to withdraw or not to continue enrollment in the next semester was used to measure the reliability of the negative aspect of student persistence (item 15). Section III of the survey used the DESP inventory.

Distance Education Student Progress (DESP) Inventory

The DESP inventory delves into four factors of social integration, academic integration, external attribution, and academic incompatibility. The DESP inventory was developed by Kember et al. (1995, 1994, &1991) and modified to use of 64 items for this study as described in Lint study (2011). Higher scores are connected to higher progress factors in this study because of opposite arrangement of the 5-point Likert scale. Permission to use the DESP inventory was purchased from the "Copyright Clearance Center."

Student Online Academic Persistence (SOAP) Inventory

Section II of the survey employed items 22, 23, and 25 of Strevy's (2009) SOAP inventory for the cost-benefit analysis and item 40 of the SOAP for student persistence. Permission to use the SOAP inventory items was granted by Dr. Strevy.

Data Analysis and Results

The Examined Variables in this Study are Listed Below:

- Independent Variables: Social integration, Academic integration, External attributions, and Academic incompatibility (Student Progress Factors).
- Mediator variable: Student Performance (GPA).
- Covariate: Student Characteristics.
- Dependent Variable: Student Persistence (three scores: measured by the intent to continue enrollment in the next semester, Q13; intent to continue enrollment including transfer to another institution or graduation, Adjusted Q13 (Ad. Q13); and extent of intent to continue enrollment in the next semester, Q14).

Descriptive Statistics and Analyses

All 800 eligible online and hybrid class students at a public community college in Maryland were invited to take an online survey for this study in the fall of 2010. The return rate was 21.1%. 169 of 800 students participated in the survey. The majority of the sample was female (78.4%) while male participation was 21.6%. Single/divorce (66.0%) and the rest (34.0%) were married.

Table 1

Student demographical characteristics

		Frequency (N)	Valid Percent (%)
Gender	Male	35	21.6%
	Female	127	78.4%
Age	18-22	72	5.3%
	Over 23	87	54.7%
Marital Status	Single/divorce	105	66.0%
	Married	54	34.0%

Note. N = numbers. Valid percent: removed the missing values and calculated the valid percent on the numbers of respondents who actually answered.

Academic integration and external attribution and student persistence Q13 were significantly correlated. External attribution and student persistence Ad.Q13 were significantly correlated. Social integration, academic integration, and external attribution were significantly correlated with student persistence Q14. GPA and student persistence Q13, Ad.Q13, and Q14 were significantly correlated. Age and Q 13, and prior online experience and student persistence Q13 and Q14 were significantly correlated (See Table 2 & 3).

Table 2

Spearman Correlation between Student Characteristics and Student Persistence (Q13 & Ad.Q13)

	Q13			Ad.Q13		
	r	p	N	r	p	N
Gender	-.067	.433	140	-.082	.333	140
Age	-.175*	.040	138	-.075	.379	138
Delivery mode	.111	.190	140	.048	.576	140
Major	-.132	.146	123	-.145	.110	123
Work environment	.018	.840	128	-.054	. 543	128
Marital status	-.113	.189	137	.012	.889	137
Online experience	.219**	.009	140	.159	.060	140

Note. r = Spearman correlation. N = numbers. p = Probability. *p<.05, **p<.01.

Table 3

Pearson Correlation between Student Characteristics and Student Persistence (Q14)

	r	p	N
Gender	-.020	.814	143
Age	-.132	.120	140
Delivery mode	.097	.252	143
Major	-.056	.535	125
Work environment	.071	.423	131
Marital status	-.033	.700	140
Online experience	.236**	.005	143

Note. r = Spearman correlation. N = numbers. p = Probability. **$p < .01$.

To answer the research question 1, this study employed logistic regression analysis for dichotomous variables Q13 and Ad.Q13 to verify the relationships among student progress factors and student persistence. For Q14, this study used the multiple regression analysis to identify the level of relationship. For the question of Q13, the intent of enrollment for online course next semester, 'Yes' was coded as 1, 'No' was coded as 0. The independent variables were social integration, academic integration, external attribution, and academic incompatibility. External attribution was significant predictor for predicating student persistence by a factor of .159. Academic incompatibility also was significant predictor for predicating student persistence by a factor of .796. Ad. Q13 was re-coded from 'No' to 'Yes' if participants answered the reason to withdraw the next online courses as 'transfer and graduation'. For Ad. Q13, the model was significantly reliable. External attribution was significant predictors of student persistence. External attribution and academic incompatibility were the predicators for student persistence of intent to enroll. For Ad.Q13, only external attribution was the significant predicators of student of intent to enroll. For Q14, the outcome between student progress factors and student persistence of extent of intent to enroll was analyzed by multiple regression analysis. The model was significant. Only academic integration was a significant predicator. As shown Table 4, the outcome between student perceptions and student persistence of intent to enroll (Q13) was analyzed by hierarchical logistic regression analysis. Prior online experience and external attribution were significant predictors for predicating student persistence. Marital status and external attribution were significant predictors for predicating student persistence.

Table 4

Hierarchical Logistic Regression Analyses Predicting the Variance among Student Progress Factors, Student characteristics, and Student Persistence (Q13)

	Model 1		Model 2		
	B	OR	B	OR	95% CI
Constant	-.688	.503	-.132	.876	
Gender	-.117	.890	.148	1.160	[.302, 4.452]
Age	-1.578	.206	-1.210	.298	[.044, 2.041]
Delivery Mode	.550	1.733	.256	1.292	[.387, 4.312]
Major	-.931	.394	- .802	.448	[.153, 1.314]
Work Environment	.065	1.068	.277	1.319	[.314, 5.534]
Marital Status	1.366	3.920	1.376	3.958	[.612, 25.614]
Online Experience	1.115*	3.050*	1.245*	3.472*	[1.127, 10.700]
Social Integration			.462	1.587	[.541, 4.652]
Academic Integration			.327	1.387	[.327, 5.893]
External Attribution			- 1.904**	.149**	[.036, .623]
Academic Incompatibility			.755	2.128	[.584, 7.758]

Note. B = Coefficient, OR = Odds Ratio, CI = Confidence Interval. Model 1 was controlled for student characteristics and learning styles without student perceptions. Learning styles were dummy coded with reference of kinesthetic. Model 2 included student perceptions.
$* p < .05, ** p < .01$.

To answer the research question 2, the researcher measured mediation effect to the relationship between student persistence and student progress factors. For measuring the meditated effect of GPA, the researcher applied Baron and Kenny (1986) four steps. After controlling student progress factors, GPA had a significant relationship with all three student persistence Q13, Ad.Q13, and Q14. For Q13, external attribution, academic incompatibility, and academic integration were still significant, but reduced after controlling GPA that implied there was a partial meditation effect. For Ad.Q13, as shown Table 5, only external attribution was significant.

Table 5

Regression Analyses for Student Perceptions and Student Persistence (Ad.Q13) Mediated by GPA

Table 5

Regression Analyses for Student Perceptions and Student Persistence (Ad.Q13) Mediated by GPA

DVs/MV	Ad.Q13		GPA		GPA + Ad.Q13		Sobel Test	
IVs	B	SE	B	SE	B	S.E	B	p
Social Integration	-.030	.481	-.180	.166	.148	.513	-1.022	.307
Academic Integration	.577	.642	.395	.247	.376	.715	1.418	.156
External Attribution	-1.545*	.650	.226	.220	-1.884**	.694	.974	.330
Academic Incompatibility	1.016	.575	-.135	.213	1.112	.615	-.621	10.535
GPA					.871**	.284		
Constant	.725	3.674	2.049	1.365	-1.200	4.005		

Note. Ad.Q13 = Adjusted student persistence. Logistic regression was used. SE:= Standard error. B= Regression coefficient. *p <.05, **p <.01.

Discussion and Suggestions of the Research

Findings

The findings of the study indicated that external attribution had a significant negative relationship with student persistence Q13 and Ad.Q13. The findings of the study also indicated that academic incompatibility and academic integration had a significant relationship with student persistence Q13 and Q14. External attribution had a significant relationship with Q13, Ad.Q13, and Q14 after controlling student characteristics. GPA had a partial indirect effect and prior online experience was significant for student persistence Q13 and Q14. Single learners were significant for student persistence Ad.Q13.

Research Question 1:

From the data analysis for the research question 1, external attribution was a critical factor consistently for student persistence of intent to enroll next semester. After controlling with covariate of student characteristics, only external attribution was a crucial factor for all three measures of student persistence. This negative attribution is a distraction, reducing students' learning time, and hindering study focus. Based on the outcome, lowering external attribution may increase student persistence. Academic incompatibility and academic integration were also significant predictors for student persistence Q13 and Q14. Academic integration also was the significant factor for student persistence of extent of intent to enroll next semester. Academic integration can be reinforced to motivate students, such as improving the quantity and quality of postings in online discussions (Jiang & Ting, 2000), focused feedback (Filimban, 2008), and providing tailored student programs to increase academic integration. The current college students directly from high school have known social networking throughout their life. Therefore, if online education institutes replicate that norm to increase persistence, it is possible to convert this to a positive influence. Additionally, the student should be given additional instruction or mentoring on time management procedures that could free up time during a stressed period such as having a new job or other external influences. Finally, prior online experience could affect student persistence. Levels of student positive interaction in the classroom directly impact levels of student persistence. Therefore, students experienced in online coursework should be nurtured, and students new to online coursework may need thorough orientation in online tools and how to build on the successes of online study.

Research Question 2:

After controlling student progress factors, GPA had a significant relationship with all three measurements of student persistence, Q13, Ad.Q13, and Q14. After controlling GPA, external attribution and academic

incompatibility were significant with student persistence Q13. External attribution and academic integration were significant with student persistence Ad.Q13 and Q14. Based on the outcome of the study, GPA had a direct relationship with student persistence. GPA had a partial mediation effect on the relationship between each student progress factors and student persistence. There was a statistically significant relationship between the GPA and student persistence to the next academic year (Davis, 2010). In this study, GPA was not a complete mediation factor; rather it was a direct factor to predict student persistence. Therefore, the leaderships of e-learning colleges need to encourage students to achieve higher performance with academic advice and contact. Because there is no face-to-face teacher-student contact in online courses, course expectations and outcomes must be clearly defined, and timely feedback must be provided (Filimban, 2008).

Implications and Interpretation

Kember (1992) and Tinto (1975) argued the importance of social integration and academic integration as crucial factors triggering student dropout or student persistence. Kember (1995) included the negative sources of external attribution and academic incompatibility as harmful factors for student persistence. The findings of this study show how the current phenomena of student perceptions reflected on student persistence. One of the issues with Kember is that it does not take into account the modern social media phenomena. In this study, external attribution was the major factor to influence student persistence. It can be extrapolated that the same negative sources of family and external attribution should include social media interaction, because the interaction is with the same factors that Kember (1995) mentioned. The negative attribution distracts students from learning is associated with insufficient time or other factors hindering study. Lowering external attribution such as the amount of social distractions between family and peers or time management between work and study should be managed to increase student persistence. This outcome is not surprising because of the growing IT business and the profuse numbers of social networking tools that are overwhelming students these days. Simultaneously, cutting edge IT development of online programs at colleges has been focused on social and academic integration for guiding and eliciting student motivation that has lead successful online education. A possible solution would be for academic institutions to reinforce social media platforms into being an educational positive interaction while also including time management education to cut distractions.

In addition, academic incompatibility predicted one score of student persistence. This can be attributed to students identifying the problem areas, and using flexible online scheduling capability to work on the key points that caused the incompatibility, such as tailoring the due dates. Flexibility shows caring by the institution and builds more loyalty to the institution by the student. Academic integration was another predictor for the degree of intent to enroll in the following semester. This implies that academic interaction and peer interaction linking to academic exchange is still a major solution for student persistence. Instructors must give focused feedback on course assignments to increase academic integration. The result of the study indicated that prior online experience could affect student persistence. M-learning as a new field may enhance student flexibility and use of time. Finally, other than student perceptions, GPA was a significant predictor for student persistence. It can be concluded that the managing of online programs at college level needs to focus students to achieve higher performance through academic advice and contact.

Limitations And Recommendations For Future Research

This study mainly focused on the relationship among student progress factors and student persistence by developing insights concerning different variables that may affect student persistence. The primary scope was to investigate the relationship between individual traits pertaining to student persistence, over which the institution typically has no control. Additionally, the subjects of this study were students who were taking online and hybrid courses at a community college. Therefore, caution must be used when desiring to attain conclusions about other types of students and institutions. However, it is possible that this study can provide a starting point for understanding what aspects may be generalizable to other online program students in other locations or having other values for their education across a variety of campus contexts.

Conclusion

Due to the current social networking environment there are ample opportunities for schools to cause increase of social integration. Seventy seven percent of academic leaders' rate learning outcomes for online courses same or superior to face to face classes (Allen & Seaman, 2013). With that tendency, the results showed the negativity of external attribution, what cannot be determined is the positive of social integration. Furthermore, the majority of e-learning students have two or more obligations such as work, family, and study that cause additional external influences which interfere in persisting with their studies. Lowering external attribution helps students continue to pursue their educational goal based on the results of the study. E-learning institutions need to move from

reinforcing interaction with students to transforming negative integration to positive integration by developing recognized friendly approaches with current technology. Students should be given additional instruction or mentoring on time management procedures to decrease distractions. If e-learning institutions can co-op social media to become a educational supportive tool it can enhance learning. Finally, student performance, GPA, and academic integration were significant factors for student persistence. These two results connect the single point how student performance is important role for student persistence because the relationship between the cumulative GPA and student persistence was significant (Davis, 2010). Based on the outcome of this study, online education colleges need to understand student motivation for the education to improve persistence. A more comprehensive understanding of student motivation as it relates to a student's decision to persist is necessary (Savage, 2010). It is determined that increased focus of social media as a tool to integrate scholarly actions and learning could increase student GPA. The quality of student positive interaction in the classroom directly impact levels of student persistence.

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