SmarterMeasure
Learning readiness indicator

2010 Student Readiness Report

SmarterServices
Helping you make smarter decisions

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INTRODUCTION

According to Sloan-C (Learning on Demand: Online Education in the United States, 2009) over 4.6 million students were taking at least one online course during the fall 2008 term - a 17 percent increase over the number reported the previous year. This 17 percent growth rate for online enrollments far exceeds the 1.2 percent growth of the overall higher education student population. More than one in four college and university students now take at least one course online. In addition to the increased numbers of online courses, many institutions are now providing hybrid courses which are combinations of online and on-campus delivery systems. Even fully on-campus courses often use learning management systems and other technology to distribute content and foster collaboration and communication within the course.

Previous studies found that among academic leaders, 64 percent believe that it takes more discipline for a learner to succeed in an online course (Sloan Consortium, 2006 & 2007), therefore, placing additional responsibility on students to be self-directed learners. Many of the students taking online, hybrid or technology rich courses are adult learners who are returning to college after several years with family and/or in the work force. Other students are traditional aged college students who have studied in primary and secondary schools with little or no technology integration or distance learning experience. **To what degree are these students ready to learn in a distance or technology rich environment?** What types of support would be beneficial to help these students succeed at learning in a new paradigm?

The purpose of the 2010 Student Readiness Report is to provide summary data from thousands of students at hundreds of colleges regarding their reported levels of readiness for studying online or in a technology rich environment. This data can inform educational leaders as they design and provide instruction and support students who are studying at a distance. The information in this report is aggregate data taken from the students' scores on the SmarterMeasure Learning Readiness Indicator between the dates of July 1, 2009 and June 30, 2010. Data from secondary school students was not included in this report.

The SmarterMeasure Learning Readiness Indictor is a web-based, 124-item assessment which measures a learner's readiness for succeeding in an online learning program or in a technology rich environment. SmarterMeasure is one of the services provided by SmarterServices, and it indicates the degree to which an individual student possesses attributes, skills and knowledge that contribute to success in online learning. SmarterMeasure includes six major assessment components that measure:

- Individual attributes – motivation, procrastination, etc.
- Learning styles – based on the multiple intelligences model
- Technical skills – skills and knowledge of computer/Internet usage
- Life Factors – availability of time, support from others, health, etc.
- Reading rate & recall

- Typing speed & accuracy

The purpose of the SmarterMeasure Learning Readiness Indicator is not to measure levels of academic skills. SmarterMeasure is designed to measure the levels of traits, attributes and skills that learners possess that make distance learning or technology rich learning a good fit for them.

This is the second year that this report has been produced. The title of the report was changed from the National Online Student Readiness Report to the Student Readiness Report to accommodate the fact that students in Canada and Puerto Rico are represented as well as students taking hybrid and/or technology rich on-campus courses.

EXECUTIVE SUMMARY OF FINDINGS

Demographic Profile: In the twelve month period represented in this report a total of 211,339 students took the SmarterMeasure Learning Readiness Indicator. Among test takers 209,025 were higher education students and 2,314 were K-12 students. For the purpose of this report, data from the K-12 students as well as all data from demonstration accounts was removed.

Of the 209,025 students who took the SmarterMeasure Learning Readiness Indicator from July 1, 2009 and June 30, 2010:

- 72% were female (up from 66% the prior year)
- 59% were Caucasian/white (down from 61% the prior year)
- 60% had never taken an online course before (down from 65% the prior year)
- 28% were traditional aged college students (18 – 22 years of age, down from 32% the prior year)
- 55% were students at an associates level institution (down from 67% the prior year)
- 28% had “social” as their dominant learning style (parallel with the prior year)
- 45% scored within the 80% – 89% range on the individual attributes scale (up from 42% the prior year)
- 28% recalled 90% or more of the reading passage (parallel from the prior year)
- 29% demonstrated 100% accuracy on the typing skills test and typed an average of 27.64 words per minute (accuracy improved from 27% the prior year but speed decreased from 28.02 wpm the prior year)
- 33% exhibited between 70% – 79% of mastery of technical knowledge (parallel from the prior year)
- 45% scored 100% on the technical competency skills tests (down from 58% the prior year)

- **Gender:** Females were found to have statistically significant higher means on the constructs of individual attributes and typing accuracy. Males were found to have statistically significant higher means on the constructs of reading rate and technical knowledge.

- **Ethnicity:** Statistically significant differences in means were reported in five of the eight constructs based on ethnicity. Caucasian/White reported the highest means for technical knowledge, typing speed and reading recall. Asian or Pacific Islander reported the highest mean for typing accuracy. American Indian reported the highest means for individual attributes.

- **Age Range:** Significant differences did exist in five of the eight of the constructs measured. Generally speaking age does matter as demonstrated below. For constructs related to personal maturity, older students had the highest means. For constructs related to technical matters, younger students had the highest means. This was consistent with the prior year's findings.

- **Number of Courses:** The results demonstrated that experience matters with online learning. In all eight constructs measured, persons who reported having taken five or more prior online courses reported the highest mean. The differences in the means were statistically significant in four of the eight groups. The greatest difference in means from students with no prior online course experience and those who had taken five or more courses was in the area of technical knowledge. This indicates that with experience students can learn to use the technology required for online courses.

- **Institution Type:** Analysis of Variance (ANOVA) was calculated to determine if differences exist between students of different types of institutions. Significant differences did exist on four of the eight constructs measured. Baccalaureate Institutions had a statistically significant higher mean in the constructs of learning styles and individual attributes while Special Focus Institutions had the highest means for reading recall and technical knowledge.

Individual Attributes: The construct of individual attributes measured by SmarterMeasure contains the following factors: (1) help seeking, (2) time management, (3) procrastination, (4) persistence, (5) academic attributes, and (6) locus of control. These factors are attributes of a person which can impact the degree to which they are comfortable and confident taking an online course. Additional analysis was made using the demographic factors and individual attributes scores.

- **Gender:** Significant differences were found with females having higher means in the factors of academic attributes and time management.

- **Ethnicity**: Significant differences were found between the ethnic groups on four of the six individual attribute factors. African Americans reported the highest means in the category of help seeking. Latino / Hispanics reported the highest means in locus of control. American Indians reported the highest means in time management and persistence.

- **Number of Prior Online Courses:** Significant differences did exist, depending on the number of prior online courses that a person has taken, in four of the six categories of individual attributes. In all of the factors, the highest mean existed for persons who had taken five or more online courses. This indicates that as a person's experience with online courses increases, the degree to which their individual attributes are a good match for distance learning also increases.

- **Age Range**: Significant differences did exist between the age categories on the factors of individual attributes. In this analysis it is clear that one's individual attributes in relation to online learning do improve with age. The highest means for all factors except help seeking were demonstrated by students 48 years or older.

- **Institution Type**: Significant differences did exist between the types of institutions and the factors of individual attributes on five of the six constructs measured. Baccalaureate colleges had statistically significant higher means on the categories of academic attributes, procrastination, persistence, and help seeking. Doctorate-granting universities had the highest means in time management.

BRIEF LITERATURE REVIEW ON LEARNER READINESS

Before the start of an online program or course, it should be determined if a learner's instructional need can be resolved through a distance education approach (Willis & Lockee, 2004). Assessing the pre-requisite skills of the distance learner is critical (Hsiu-Mei & Liaw, 2004; Simonson et al., 2003). Learners need to have enough pre-requisite skills of technological proficiency and a strong motivation to learn by technology (Hsiu-Mei & Liaw, 2004). Because of the difficulty in accommodating a group of learners with a wide range of acquired skills, requirements for prerequisite skills should be set (Falvo & Solloway, 2004).

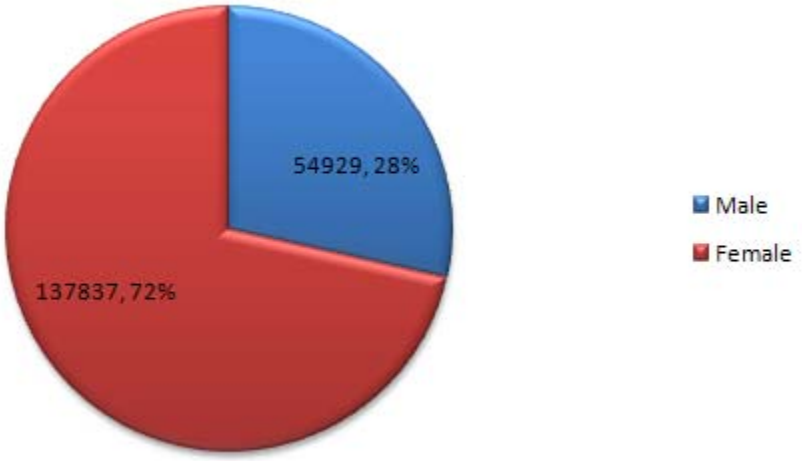
Pamela Dupin-Bryant of Utah State University conducted a study which was published in *The American Journal of Distance Education* titled "Pre-entry Variables Related to Retention in Online Distance Education." This study identified pre-entry variables related to course completion and non-completion in university online distance education courses. Four hundred and sixty-four students who were enrolled in online distance education courses participated in the study. Discriminate analysis revealed six pre-entry variables were related to retention, including cumulative grade point average, class rank, number of previous courses completed online, searching the Internet training, operating systems and file management training, and Internet applications training. Results indicate prior educational experience and prior computer training may help distinguish between individuals who complete university online distance education courses and those who do not. SmarterMeasure measures all of the variables that this study identified as indicators of success, except for class rank.

2010 SUMMARY DATA AND ANALYSIS

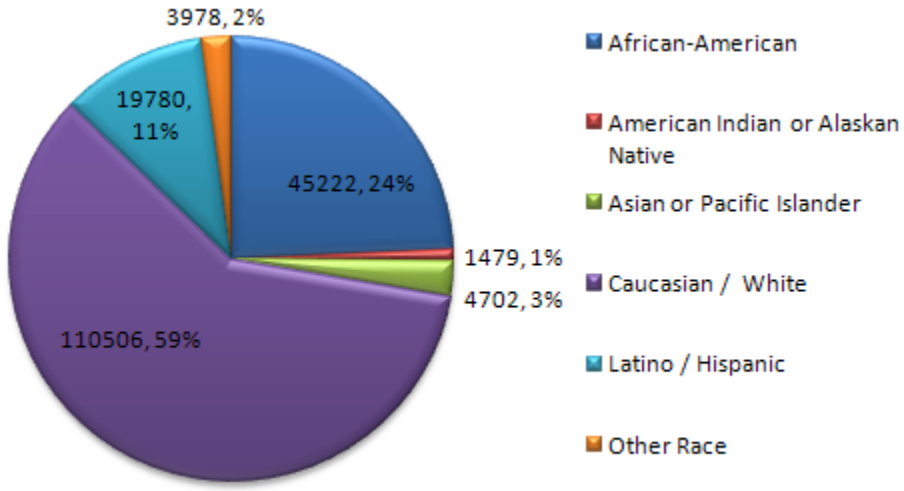
Data were collected for this report from students who took the SmarterMeasure assessment from July 1, 2009 to June 30, 2010. These users were students taking online and/or technology rich courses during the 2009/2010 academic year. During this period of time, there were 209,025 unique students who took the SmarterMeasure assessment. For this report, duplicate records and all records from sample accounts were removed.

DEMOGRAPHIC FREQUENCIES

Gender: Of the students taking SmarterMeasure during the 2009/2010 academic year, 72% were female and 28% were male.



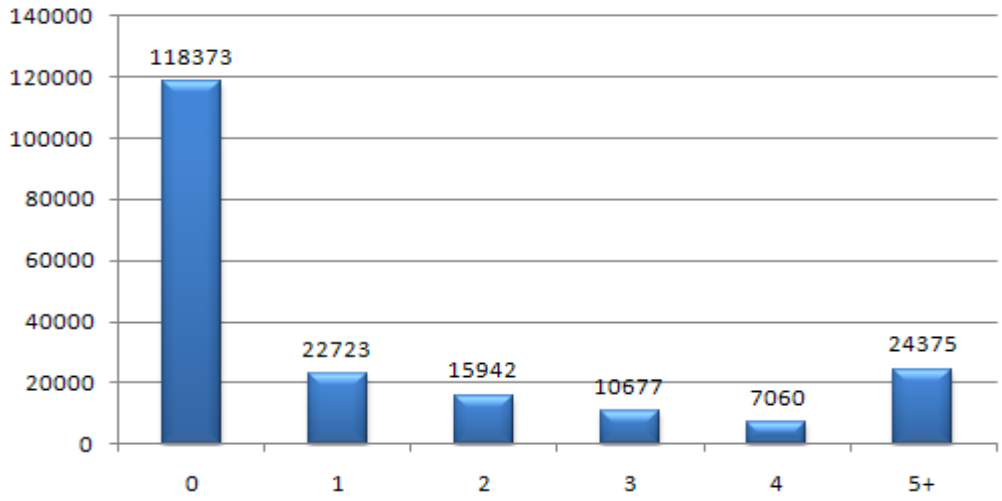
Ethnicity: The majority of students included in this report were Caucasian / White (59%). The second largest group was African American (24%).



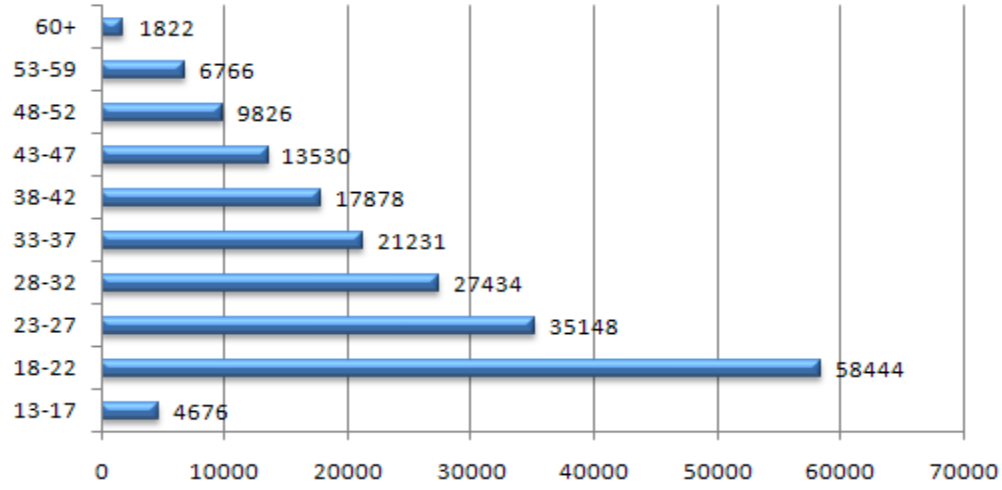
African-American	45222
American Indian or Alaskan Native	1479
Asian or Pacific Islander	4702
Caucasian / White	110506
Latino / Hispanic	19780
Other Race	3978

It should be noted that schools do have the option to opt out of asking this question to students, and if schools do ask the ethnicity question, it is not a required question. As a result of this option, over 23,000 students did not report ethnicity.

Number of Online Courses Taken: Institutions typically provide SmarterMeasure to students who have not yet taken an online or technology rich course. However, students who are new to one institution may have already taken an online course at another institution. This fact may impact their level of readiness to learn online. As a result, a demographic question is asked in SmarterMeasure to measure the number of online courses a student has already taken. The majority (60%, down from 65% the prior year) of students reported that they had never taken an online course prior to taking the SmarterMeasure assessment.

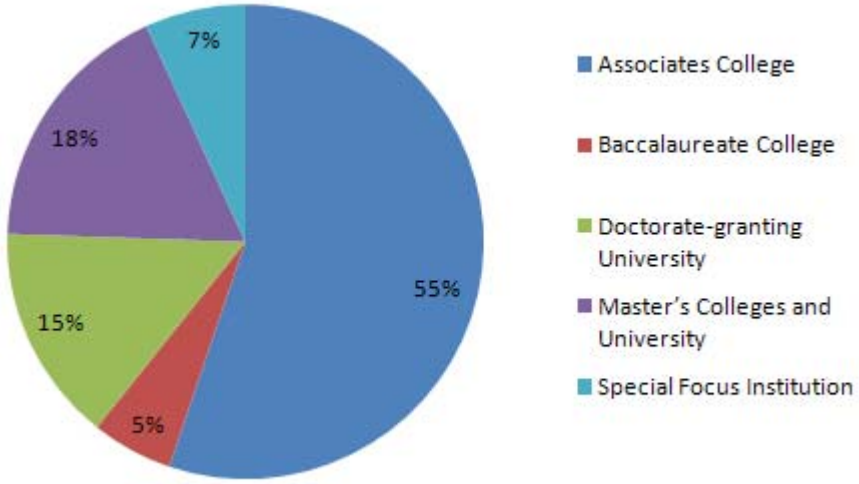


Age Range: Learners are asked to report their age range. A large percentage (28%, down from 32% from the prior year) of students taking SmarterMeasure during Academic Year 2009 – 2010 were traditional age college students (18 – 22).



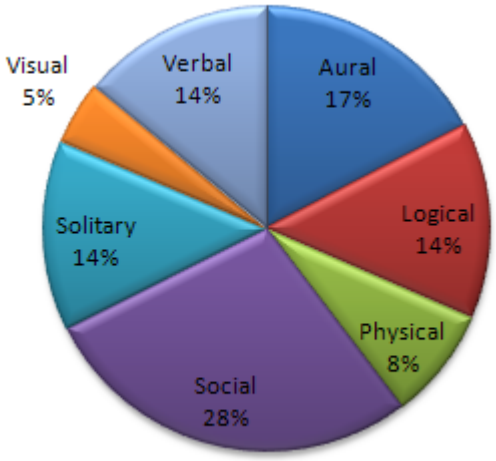
Institution Type: Educational institutions using SmarterMeasure are classified by the type of institution. Available types include (1) Doctorate-granting University, (2) Master's College or University, (3) Baccalaureate College, (4) Associates College, (5) Public High School, (6) Private High School, (7) Public Middle School, (8) Private Middle School, (9) Public Elementary School, (10) Private Elementary School, (11) Public K-12 System, (12) Private K-12 System, (13) Home School, (14) Special Focus Institution, and (15) Corporation.

The majority (55%) of participants were from Associates Colleges which includes community colleges, junior colleges, and technical colleges. 18% were from Master's Degree granting institutions and 15% from Doctoral Degree granting institutions.

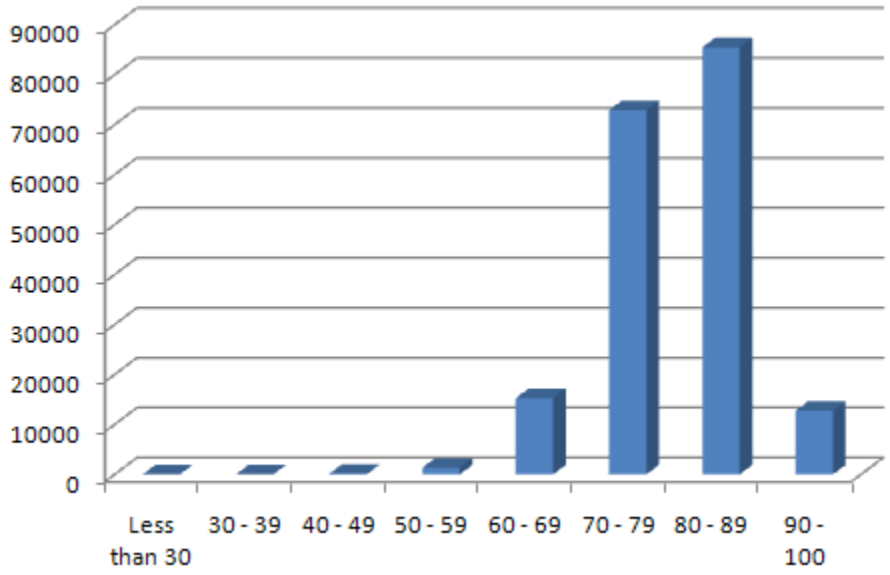


SECTION FREQUENCIES

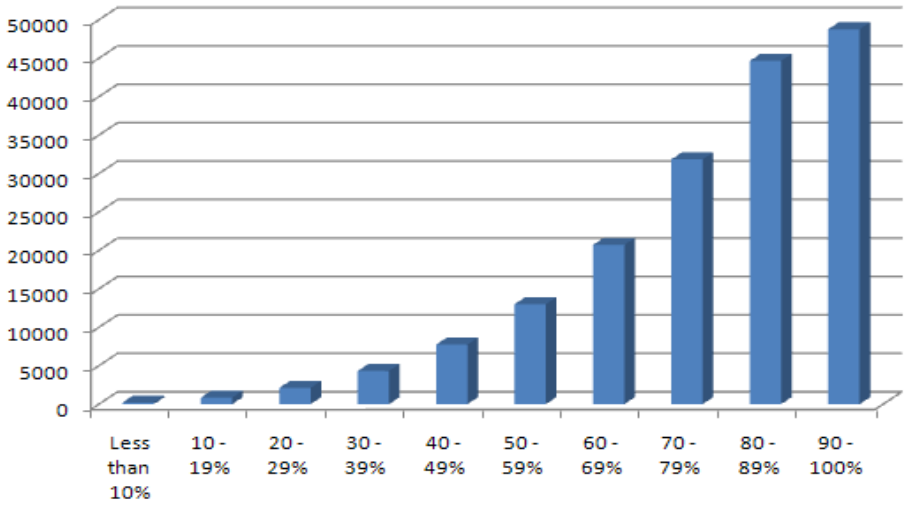
Dominant Learning Styles: Students learn using a variety of learning styles. Most persons are able to adapt their learning style to the format of the content. However, many persons do have a dominant learning style which defines their preferred method of receiving information. This analysis found that the most common dominant learning style was Social (28%). The least common dominant learning style was Visual (5%). This finding is of interest to instructional designers who seek to construct online courses which appeal across the learning styles.



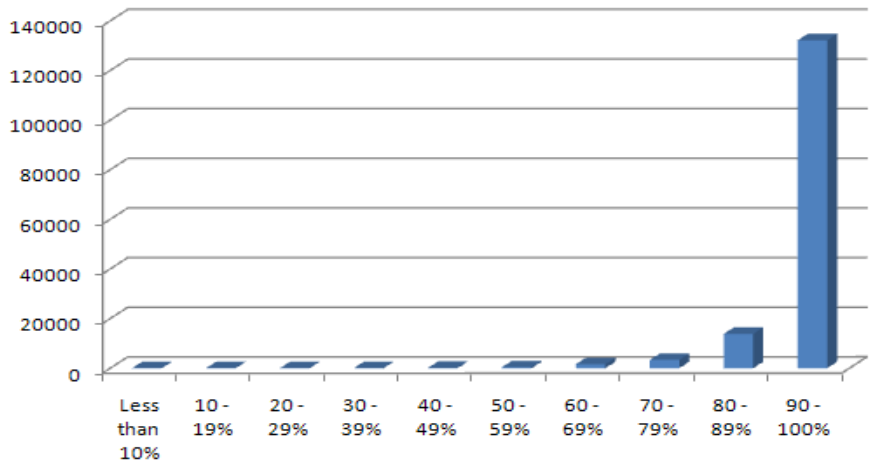
Individual Attributes: On the SmarterMeasure assessment, students are asked several questions which quantify their levels of individual attributes. The following individual attributes are measured: (1) help seeking, (2) time management, (3) procrastination, (4) persistence, (5) academic attributes, and (6) locus of control. These six individual attributes are reported in aggregate on a scale of 0 to 100 with 100 indicating a very high level of the attributes. 45% (up from 42% the prior year) of students scored within the 80 – 89% range.



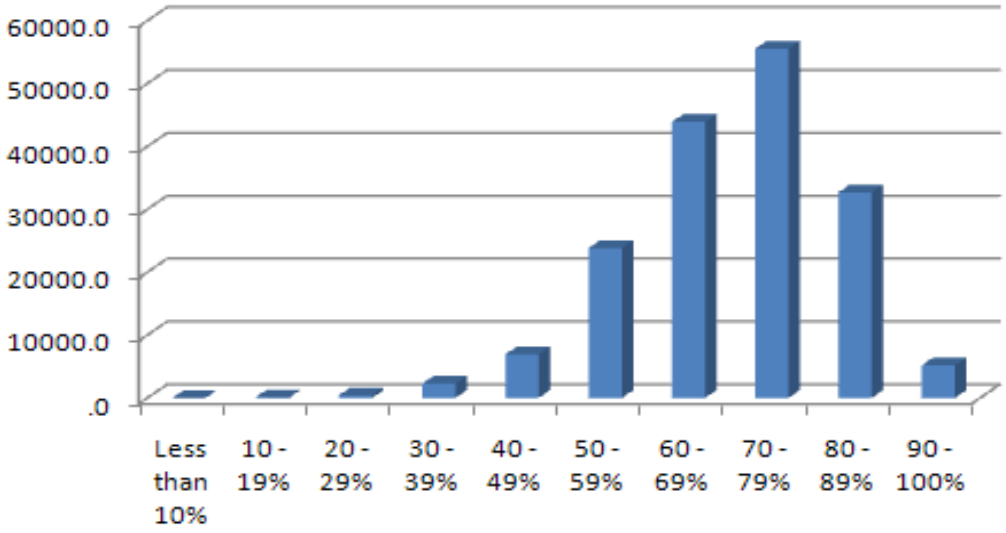
Reading Rate and Recall: On the SmarterMeasure assessment, students read a brief passage and then complete a quiz to measure the degree to which they can recall the information. The rationale is that much information in online courses is presented via text on-screen and a person's ability to remember what they have read is important. This report is encouraging in that 28% of students recalled 90% or more of what they read. 26% recalled 80% – 89% of what they read. So over half of the students recalled 80% or more of what they had read. The average reading words per minute was 305.



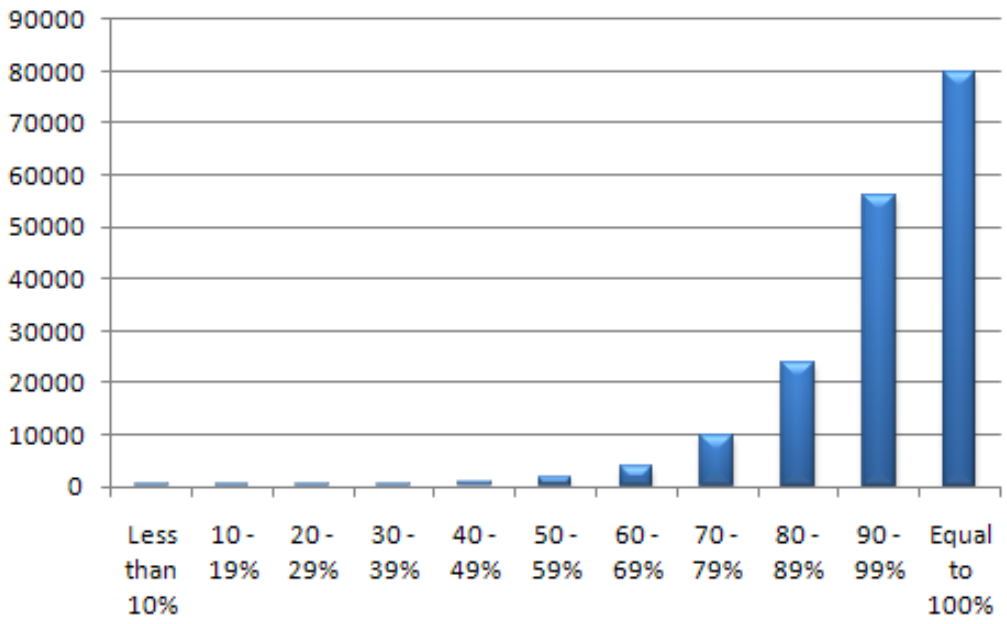
Typing Speed and Accuracy: The average typing speed was 27.64 words per minute (down from 28.02 from the prior year). This figure is the Adjusted Words Per Minute and is adjusted to factor in the number of errors. However, the standard deviation of Adjusted Words Per Minute was high at 41.418, so considerable variance was exhibited in typing skills among students who took SmarterMeasure during this academic year. Overall, students demonstrated a high degree of accuracy when typing. 29% of students demonstrated 100% accuracy on the typing skills test.



Technical Knowledge: On the SmarterMeasure assessment, students are asked a series of questions which measure the degree to which they possess knowledge about technical terms and software usage. Technical Knowledge is measured on a scale of 0 – 100 with 100 being a high degree of Technical Knowledge. 33% of students exhibited between 70% – 79% of mastery of technical knowledge.



Technical Competency: Students are asked to complete a series of skill tests to demonstrate their level of competency with basic technical tasks. Overall, students performed well on this element of SmarterMeasure with 45% (down from 58% the prior year) scoring 100%.



COMPARISON OF MEANS

Because this data set is so large (N=209,025), any comparison of means such as an independent sample t-test or an ANOVA will yield a statistically significant difference due to the magnitude of the sample size. To control for this impractical significance, a random sample of 2% (N=4104) of the full data set was selected for analysis in this section. Random cases were selected using the random sample tool in SPSS (Statistical Program for Social Sciences).

It should be noted that the life factors section was made available on May 11, 2010. Life Factors data was only collected for a fifty day period during the term of this report. The random sample of cases for the analysis below was taken from the entire twelve month period. Therefore the number of cases for analysis of Life Factors means is much smaller than for the other constructs.

Gender: Independent sample *t*-tests were calculated to determine if there are statistically significant differences between the means of gender and the constructs measured by SmarterMeasure. For scoring and reporting purposes each of the constructs measured by SmarterMeasure are quantified on a 0 to 100 scale. This scale is considered the composite score for that construct. Females were found to have statistically significant higher means on the constructs of individual attributes and typing accuracy. Males were found to have statistically significant higher means on the constructs of reading rate and technical knowledge.

Note: in the following tables the highest mean is underlined and bolded for ease of interpretation. Statistically significant differences in means are indicated in a bold, red font.

	GENDER	N	Mean	Std. Deviation	Significance
Learning Styles	Male	980	63.93	13.187	
	Female	2411	65.07	13.022	.774
Individual Attributes	Male	979	77.67	7.527	
	Female	2495	**79.70**	6.886	**.000**
Reading Recall	Male	931	75.99	17.936	
	Female	2273	72.13	18.219	.223
Reading Rate	Male	940	**383.79**	1224.674	
	Female	2312	310.34	769.177	**.002**
Typing Accuracy	Male	827	91.50	19.012	
	Female	2023	**92.65**	16.198	**.026**
Typing Speed	Male	827	26.94	30.781	
	Female	2023	28.62	49.884	.726
Technical Knowledge	Male	909	**72.08**	12.838	
	Female	2182	68.82	11.532	**.001**
Life Factors	Male	62	78.24	9.605	
	Female	150	80.29	9.176	.487

Ethnicity: Analysis of Variance (ANOVA) was calculated to determine if there are statistically significant differences between the means of the different ethnic groups and the constructs measured by SmarterMeasure. Statistically significant differences in means were reported in five of the eight constructs based on ethnicity. Caucasian/White reported the highest means for technical knowledge, typing speed and reading recall. Asian or Pacific Islander reported the highest mean for typing accuracy. American Indian reported the highest means for individual attributes.

		N	Mean	Std. Deviation	Sig.
Learning Styles	African-American	726	64.09	13.678	
	American Indian	27	69.52	14.972	
	Asian or Pacific Islander	77	64.53	15.566	
	Caucasian/White	2001	64.65	12.613	
	Latino / Hispanic	373	65.41	13.690	
	Other race	57	67.42	12.111	
	Total	3261	64.70	13.077	.116
Individual Attributes	African-American	748	80.01	7.370	
	American Indian	27	**80.64**	5.851	
	Asian or Pacific Islander	83	77.69	7.207	
	Caucasian/White	2035	78.79	7.134	
	Latino / Hispanic	386	79.67	6.585	
	Other race	60	78.65	6.855	
	Total	3339	79.15	7.134	**.000**
Reading Recall	African-American	685	64.93	20.011	
	American Indian	27	70.44	23.644	
	Asian or Pacific Islander	72	69.92	16.590	
	Caucasian/White	1887	**76.48**	16.400	
	Latino / Hispanic	355	72.44	18.198	
	Other race	53	69.43	17.442	

	Total	3079	73.12	18.180	**.000**
Reading Rate	African-American	693	360.68	942.580	
	American Indian	27	316.56	472.658	
	Asian or Pacific Islander	73	468.66	1516.559	
	Caucasian/White	1912	312.60	766.496	
	Latino / Hispanic	365	311.22	821.521	
	Other race	55	288.15	312.743	
	Total	3125	326.35	832.042	.539
Typing Accuracy	African-American	599	89.16	20.869	
	American Indian	24	94.83	9.054	
	Asian or Pacific Islander	68	**95.06**	12.266	
	Caucasian/White	1678	93.52	15.317	
	Latino / Hispanic	326	91.73	17.707	
	Other race	45	93.56	7.548	
	Total	2740	92.41	16.870	**.000**
Typing Speed	African-American	599	22.95	39.465	
	American Indian	24	25.88	10.389	
	Asian or Pacific Islander	68	29.76	12.970	
	Caucasian/White	1678	**30.37**	53.340	
	Latino / Hispanic	326	26.88	11.868	
	Other race	45	26.51	11.806	
	Total	2740	28.22	45.992	**.035**
Technical Knowledge	African-American	651	65.54	13.296	
	American Indian	27	69.89	12.546	
	Asian or Pacific Islander	69	70.34	11.496	
	Caucasian/White	1835	**71.10**	11.287	
	Latino / Hispanic	338	70.09	11.444	
	Other race	50	69.69	12.687	

	Total	2970	69.71	12.015	**.000**
Life Factors	African-American	34	77.85	9.381	
	American Indian	0	.	.	
	Asian or Pacific Islander	5	79.00	13.874	
	Caucasian/White	142	80.73	9.134	
	Latino / Hispanic	22	79.36	7.907	
	Other race	3	67.67	2.517	
	Total	206	79.87	9.230	.083

Number of Online Courses Taken: Analysis of Variance (ANOVA) was calculated to determine the impact that a person taking prior online courses has on their readiness. The results demonstrated that experience matters with online learning. In all eight constructs measured, persons who reported having taken five or more prior online courses reported the highest mean. The differences in the means were statistically significant in four of the eight groups. The greatest difference in means from students with no prior online course experience and those who had taken five or more courses was in the area of technical knowledge. This indicates that with experience students can learn to use the technology required for online courses.

		N	Mean	Std. Deviation	Sig.
Learning Styles	0	2075	64.07	13.152	
	1	371	64.25	13.321	
	2	281	65.17	11.774	
	3	197	66.27	13.239	
	4	113	65.30	12.006	
	5	400	**67.36**	13.591	
	Total	3437	64.73	13.123	**.000**
Individual Attributes	0	2132	78.69	7.215	
	1	372	78.28	6.998	
	2	285	79.33	6.534	
	3	205	79.06	6.916	
	4	119	79.92	6.692	
	5	410	**81.82**	6.955	
	Total	3523	79.13	7.144	**.000**
Reading Recall	0	1940	72.47	18.524	
	1	355	73.12	17.173	
	2	268	74.44	17.968	
	3	188	73.13	18.838	
	4	108	75.29	15.661	

	5	384	**76.19**	17.708	
	Total	3243	73.28	18.201	**.007**
Reading Rate	0	1977	319.77	815.186	
	1	359	317.92	675.916	
	2	269	315.20	614.723	
	3	190	323.98	684.015	
	4	111	399.32	1336.202	
	5	387	398.05	1548.849	
	Total	3293	331.32	920.833	.682
Typing Accuracy	0	1713	92.18	16.611	
	1	311	93.38	14.463	
	2	245	92.56	18.016	
	3	166	93.57	14.285	
	4	94	92.01	20.521	
	5	358	91.60	19.983	
	Total	2887	92.34	16.986	.709
Typing Speed	0	1713	27.52	57.327	
	1	311	27.31	12.358	
	2	245	27.51	12.345	
	3	166	30.14	13.047	
	4	94	30.32	13.030	
	5	358	30.27	13.314	
	Total	2887	28.08	44.913	.872
Technical Knowledge	0	1915	68.00	12.082	
	1	349	69.41	11.897	
	2	257	71.54	11.425	
	3	177	73.08	9.875	
	4	107	71.60	11.603	

	5	383	**75.83**	10.474	
	Total	3188	69.78	11.996	**.000**
Life Factors	0	142	80.37	9.236	
	1	19	78.37	13.692	
	2	19	79.42	9.221	
	3	11	80.36	11.509	
	4	4	70.75	15.108	
	5	25	77.40	8.347	
	Total	220	79.60	9.831	.335

Age Range: Analysis of Variance (ANOVA) was calculated to determine if differences exist between age ranges. Significant differences did exist in five of the eight of the constructs measured. Generally speaking age does matter as demonstrated below. For constructs related to personal maturity, older students had the highest means. For constructs related to technical matters, younger students had the highest means. This was consistent with the prior year's findings.

Age Range	Highest Mean
13-17	Learning Styles Typing Speed
18-22	Reading Rate Typing Accuracy
23-27	
28-32	
33-37	Technical Knowledge
38-42	
43-47	
48-52	Individual Attributes
53-59	
60+	Reading Recall Life Factors

		N	Mean	Std. Deviation	Sig.
Learning Styles	13-17	36	**67.22**	11.660	
	18-22	1048	65.11	12.991	
	23-27	629	66.52	13.169	
	28-32	472	65.58	13.279	
	33-37	343	63.70	12.884	
	38-42	312	62.50	12.241	
	43-47	222	62.10	13.245	
	48-52	164	62.50	13.351	
	53-59	109	63.32	14.025	
	60+	32	65.36	10.392	
	Total	3367	64.70	13.086	.000
Individual Attributes	13-17	35	76.85	5.632	

	18-22	1099	77.18	7.466	
	23-27	643	79.63	6.764	
	28-32	479	80.06	7.205	
	33-37	344	79.97	6.280	
	38-42	313	80.20	7.094	
	43-47	226	80.80	6.393	
	48-52	165	**81.18**	6.358	
	53-59	112	80.73	6.860	
	60+	32	79.98	7.216	
	Total	3448	79.15	7.136	**.000**
Reading Recall	13-17	30	74.88	17.254	
	18-22	988	71.87	18.923	
	23-27	586	72.71	18.973	
	28-32	448	74.22	17.019	
	33-37	320	73.07	17.175	
	38-42	296	76.35	17.642	
	43-47	215	73.49	17.715	
	48-52	156	73.23	19.157	
	53-59	105	74.41	16.229	
	60+	32	**80.06**	12.821	
	Total	3176	73.27	18.199	**.011**
Reading Rate	13-17	31	227.52	113.647	
	18-22	1003	367.00	954.227	
	23-27	600	346.63	1126.911	
	28-32	451	256.37	426.212	
	33-37	326	258.73	375.473	
	38-42	301	318.36	856.784	
	43-47	216	330.68	1026.683	

	48-52	159	298.25	807.703	
	53-59	106	344.94	1192.839	
	60+	32	170.66	47.867	
	Total	3225	322.42	881.859	.459
Typing Accuracy	13-17	32	97.41	2.917	
	18-22	872	**93.03**	15.824	
	23-27	537	91.98	18.055	
	28-32	400	92.60	16.085	
	33-37	275	91.88	18.253	
	38-42	262	92.17	17.797	
	43-47	197	92.53	13.772	
	48-52	139	91.93	15.910	
	53-59	91	88.47	22.707	
	60+	25	80.72	33.524	
	Total	2830	92.28	17.045	**.012**
Typing Speed	13-17	32	32.56	13.517	
	18-22	872	27.59	12.186	
	23-27	537	31.90	94.644	
	28-32	400	27.02	13.134	
	33-37	275	26.61	12.930	
	38-42	262	27.16	13.035	
	43-47	197	29.79	57.832	
	48-52	139	25.04	12.986	
	53-59	91	23.21	14.382	
	60+	25	18.48	12.366	
	Total	2830	28.06	45.328	.543
Technical Knowledge	13-17	32	67.38	10.179	
	18-22	966	68.31	11.418	

	23-27	573	70.79	11.616	
	28-32	438	72.13	11.738	
	33-37	308	**72.64**	11.975	
	38-42	293	70.35	12.975	
	43-47	218	67.51	12.050	
	48-52	157	67.75	12.981	
	53-59	104	67.73	11.603	
	60+	31	64.01	15.554	
	Total	3120	69.77	12.006	**.000**
Life Factors	13-17	0	.	.	.
	18-22	81	78.93	9.922	
	23-27	40	80.28	11.429	
	28-32	20	78.20	9.704	
	33-37	22	75.18	9.440	
	38-42	16	83.63	7.745	
	43-47	17	80.41	8.441	
	48-52	5	74.60	10.738	
	53-59	8	82.38	6.093	
	60+	3	83.67	3.055	
	Total	212	79.29	9.838	.235

Institution Type: Analysis of Variance (ANOVA) was calculated to determine if differences exist between students of different types of institutions. Significant differences did exist on four of the eight constructs measured. Baccalaureate institutions had a statistically significant higher mean in the constructs of learning styles and individual attributes while Special Focus Institutions had the highest means for reading recall and technical knowledge.

		N	Mean	Std. Deviation	Sig.
Learning Styles	Associates College	1981	65.317617	13.2249824	
	Baccalaureate College	127	**68.222992**	14.7813419	
	Corporation	4	52.145000	10.7213945	
	Doctorate-granting University	611	65.793928	12.5735576	
	Master's Colleges and University	688	64.084273	13.2879973	
	Special Focus Institution	264	66.055303	12.3380256	
	Total	3675	65.304971	13.1472173	**.003**
Individual Attributes	Associates College	2059	79.416367	7.2577169	
	Baccalaureate College	130	**80.962538**	7.0064368	
	Corporation	5	77.294000	9.5864399	
	Doctorate-granting University	621	80.192029	6.3781282	
	Master's Colleges and University	711	78.275260	7.5291052	
	Special Focus Institution	214	79.990047	6.3743246	
	Total	3740	79.411960	7.1459766	**.000**
Reading Recall	Associates College	1826	72.665246	17.9146809	
	Baccalaureate College	137	66.642336	18.9534015	
	Corporation	4	67.955000	13.2033367	

	Doctorate-granting University	587	74.988433	17.8494102	
	Master's Colleges and University	651	74.506436	17.1808305	
	Special Focus Institution	255	**76.862745**	17.3534580	
	Total	3460	73.471231	17.8557325	.000
Reading Rate	Associates College	1852	327.55	899.647	
	Baccalaureate College	139	364.89	876.598	
	Corporation	4	211.75	71.093	
	Doctorate-granting University	594	276.29	590.909	
	Master's Colleges and University	664	281.69	659.429	
	Special Focus Institution	256	219.24	193.087	
	Total	3509	303.64	776.152	.223
Typing Accuracy	Associates College	1757	91.90	17.434	
	Baccalaureate College	84	89.79	21.352	
	Corporation	4	97.75	2.062	
	Doctorate-granting University	536	93.52	13.711	
	Master's Colleges and University	522	92.68	16.874	
	Special Focus Institution	203	93.72	14.350	
	Total	3106	92.38	16.684	.162
Typing Speed	Associates College	1757	26.10	12.750	
	Baccalaureate College	84	27.51	45.764	
	Corporation	4	29.75	14.033	
	Doctorate-granting University	536	27.20	12.850	

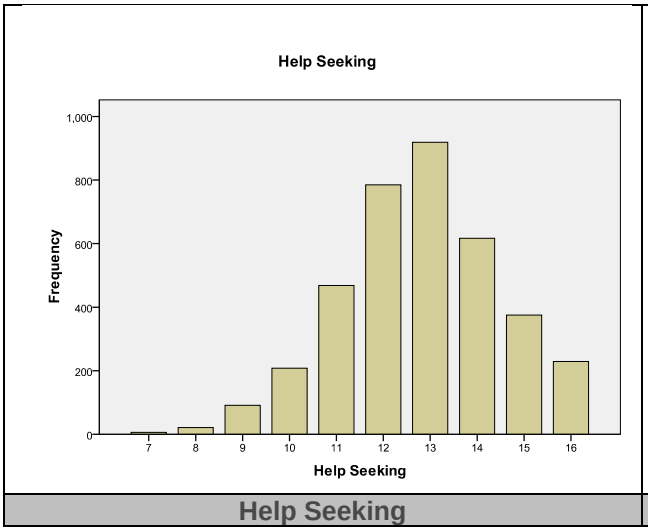
	Master's Colleges and University	522	27.86	13.596	
	Special Focus Institution	203	28.51	12.659	
	Total	3106	26.79	14.789	.074
Tech Knowledge	Associates College	1778	69.086856	12.2487423	
	Baccalaureate College	184	67.613315	12.1031590	
	Corporation	4	62.502500	16.0861128	
	Doctorate-granting University	571	71.974694	12.4505653	
	Master's Colleges and University	611	70.444255	11.8838958	
	Special Focus Institution	254	**73.327992**	11.5849903	
	Total	3402	70.044559	12.2523964	**.000**
Life Factors	Associates College	297	80.20	8.945	
	Baccalaureate College	35	77.20	8.781	
	Corporation	0	.	.	
	Doctorate-granting University	40	78.55	10.527	
	Master's Colleges and University	118	80.19	9.418	
	Special Focus Institution	47	76.91	10.340	
	Total	537	79.59	9.329	.077

ADDITIONAL ANALYSIS OF INDIVIDUAL ATTRIBUTES

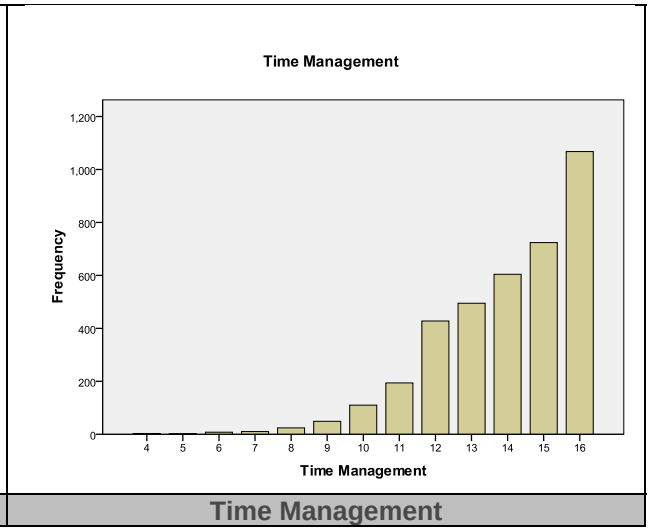
The construct of individual attributes measured by SmarterMeasure contains the following factors: (1) help seeking, (2) time management, (3) procrastination, (4) persistence, (5) academic attributes, and (6) locus of control. These factors are attributes of a person which can impact the degree to which they are comfortable and confident taking an online course.

"Help Seeking" is the degree to which a person is willing to ask for help when needed. "Time Management" is the degree to which a person can plan for the appropriate use of their time. "Procrastination" is the degree to which a person completes tasks in a timely manner. "Persistence" is the degree to which a person maintains activity with a task until completion. "Academic Attributes" are indicative of a person's prior academic success. "Locus of Control" is the degree to which a person feels that they are in control of their outcomes. Each of these factors was measured on a composite score ranging from 1 – 16 with 16 being a high degree of the attributes.

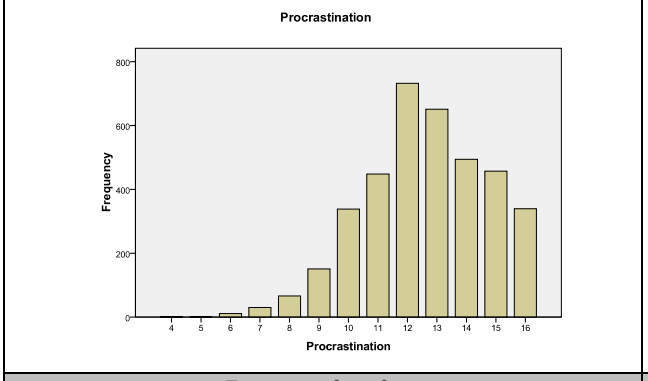
The bar charts below present a frequency report of the scores for each factor on the scale of 1 – 16 with 16 being a high degree of the attribute.



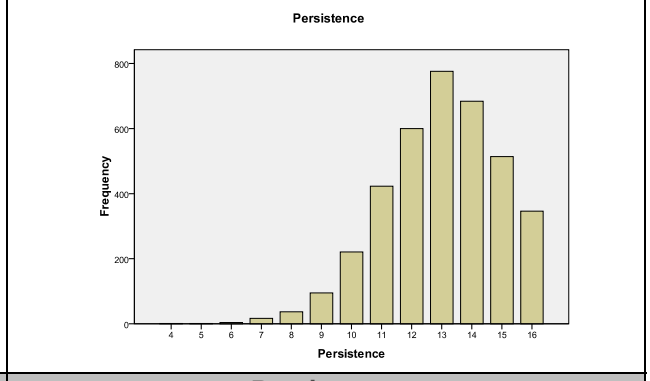
Help Seeking



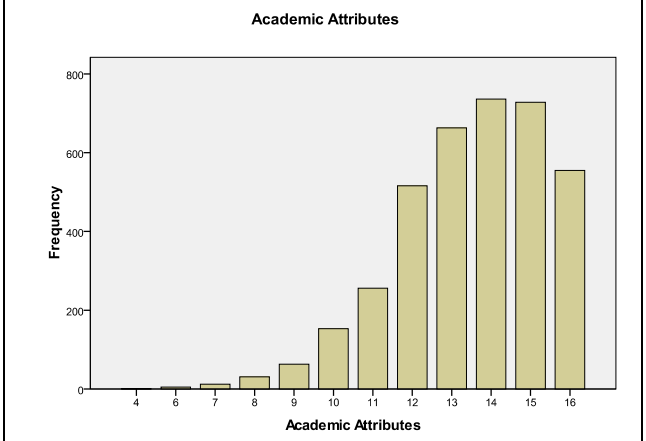
Time Management



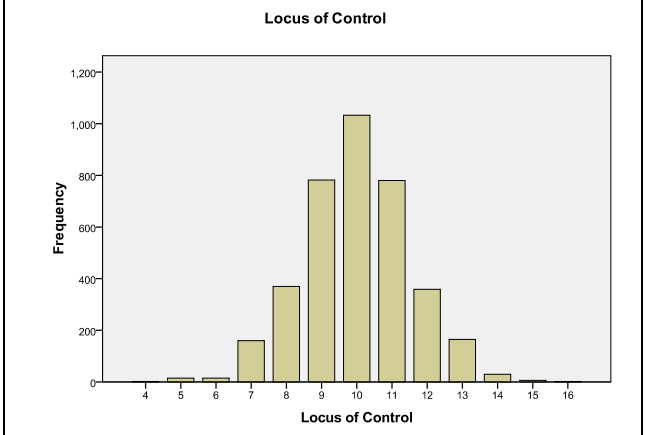
Procrastination



Persistence



Academic Attributes



Locus of Control

Additional analysis was conducted to determine if significant differences existed between the demographic groups and these individual attributes factors.

Gender: Significant differences were found with females having higher means in the factors of academic attributes and time management.

Group Statistics

	GENDER	N	Mean	Std. Deviation	Significance
Academic Attributes	Male	979	13.12	1.956	
	Female	2495	**13.64**	1.831	**.018**
Help Seeking	Male	979	12.55	1.646	
	Female	2495	12.87	1.711	.982
Persistence	Male	979	12.81	1.902	
	Female	2495	13.08	1.887	.327
Procrastination	Male	979	12.42	2.048	
	Female	2495	12.74	2.094	.227
Time Management	Male	979	13.48	2.146	
	Female	2495	**14.17**	1.856	**.000**
Locus of Control	Male	979	10.12	1.525	
	Female	2495	9.94	1.517	.645

Ethnicity: Significant differences were found between the ethnic groups in four of the six individual attribute factors. African Americans reported the highest means in the category of help seeking. Latino / Hispanics reported the highest means in locus of control. American Indians reported the highest means in time management and persistence.

		N	Mean	Std. Deviation	Sig.
Academic Attributes	African-American	748	13.48	1.964	
	American Indian	27	13.44	1.625	
	Asian or Pacific Islander	83	13.27	1.970	
	Caucasian/White	2035	13.49	1.882	
	Latino / Hispanic	386	13.62	1.776	
	Other race	60	13.55	1.478	
	Total	3339	13.50	1.882	.669
Help Seeking	African-American	748	**13.25**	1.754	
	American Indian	27	12.67	1.754	
	Asian or Pacific Islander	83	12.49	1.776	
	Caucasian/White	2035	12.60	1.649	
	Latino / Hispanic	386	12.81	1.635	
	Other race	60	13.25	1.684	
	Total	3339	12.78	1.697	**.000**
Persistence	African-American	748	13.30	1.956	
	American Indian	27	**13.67**	1.617	
	Asian or Pacific Islander	83	12.78	1.661	
	Caucasian/White	2035	12.90	1.882	
	Latino / Hispanic	386	13.05	1.782	
	Other race	60	12.83	2.001	
	Total	3339	13.01	1.890	**.000**
Procrastination	African-American	748	12.77	2.163	

	American Indian	27	13.15	1.975	
	Asian or Pacific Islander	83	12.65	2.015	
	Caucasian/White	2035	12.64	2.073	
	Latino / Hispanic	386	12.59	2.056	
	Other race	60	12.33	2.260	
	Total	3339	12.66	2.093	.341
Time Management	African-American	748	13.97	2.027	
	American Indian	27	**14.41**	1.670	
	Asian or Pacific Islander	83	13.48	1.850	
	Caucasian/White	2035	13.95	1.980	
	Latino / Hispanic	386	14.17	1.788	
	Other race	60	13.77	2.110	
	Total	3339	13.97	1.968	**.050**
Locus of Control	African-American	748	9.90	1.702	
	American Indian	27	9.67	1.494	
	Asian or Pacific Islander	83	9.76	1.511	
	Caucasian/White	2035	10.00	1.441	
	Latino / Hispanic	386	**10.24**	1.553	
	Other race	60	9.77	1.671	
	Total	3339	9.99	1.525	**.004**

Number of Prior Online Courses: Significant differences did exist depending on the number of prior online courses that a person has taken in four of the six categories of individual attributes. In all of the factors, the highest mean existed for persons who had taken five or more online courses. This indicates that as a person's experience with online courses increases, the degree to which their individual attributes are a good match for distance learning also increases.

		N	Mean	Std. Deviation	Sig.
Academic Attributes	0	2132	13.34	1.907	
	1	372	13.26	1.871	
	2	285	13.67	1.712	
	3	205	13.80	1.889	
	4	119	13.70	1.749	
	5	410	**14.20**	1.697	
	Total	3523	13.50	1.880	**.000**
Help Seeking	0	2132	12.78	1.696	
	1	372	12.62	1.827	
	2	285	12.89	1.564	
	3	205	12.64	1.673	
	4	119	12.80	1.665	
	5	410	12.91	1.715	
	Total	3523	12.78	1.701	.139
Persistence	0	2132	12.92	1.926	
	1	372	12.85	1.837	
	2	285	12.93	1.758	
	3	205	13.04	1.899	
	4	119	13.19	1.762	
	5	410	**13.56**	1.842	

	Total	3523	13.00	1.897	**.000**
Procrastination	0	2132	12.60	2.094	
	1	372	12.50	2.037	
	2	285	12.46	1.988	
	3	205	12.51	2.166	
	4	119	12.74	2.073	
	5	410	**13.15**	2.099	
	Total	3523	12.64	2.092	**.000**
Time Management	0	2132	13.86	2.047	
	1	372	13.88	1.963	
	2	285	14.13	1.743	
	3	205	13.98	1.858	
	4	119	14.13	1.695	
	5	410	**14.50**	1.727	
	Total	3523	13.97	1.968	**.000**
Locus of Control	0	2132	9.99	1.512	
	1	372	10.02	1.479	
	2	285	9.99	1.554	
	3	205	9.80	1.495	
	4	119	10.06	1.509	
	5	410	10.03	1.649	
	Total	3523	9.99	1.527	.598

Age Range: Significant differences did exist between the age categories on the factors of individual attributes. In this analysis, it is clear that one's individual attributes in relation to online learning do improve with age. The highest means for all factors except help seeking were demonstrated by students 48 years or older.

Age Range	Highest Mean
13-17	
18-22	
23-27	
28-32	
33-37	
38-42	
43-47	Academic Attributes
48-52	Procrastination Time Management Locus of Control
53-59	Persistence
60+	Help Seeking

		N	Mean	Std. Deviation	Sig.
Academic Attributes	13-17	35	13.23	1.374	
	18-22	1099	13.17	1.985	
	23-27	643	13.69	1.823	
	28-32	479	13.61	1.955	
	33-37	344	13.56	1.728	
	38-42	313	13.70	1.723	
	43-47	226	**13.75**	1.728	
	48-52	165	13.60	1.851	
	53-59	112	13.71	1.838	
	60+	32	13.66	1.753	
	Total	3448	13.50	1.880	.000
Help Seeking	13-17	35	12.11	1.891	
	18-22	1099	12.33	1.703	

	23-27	643	12.79	1.617	
	28-32	479	13.03	1.685	
	33-37	344	13.00	1.608	
	38-42	313	13.07	1.620	
	43-47	226	13.17	1.689	
	48-52	165	13.26	1.649	
	53-59	112	13.27	1.588	
	60+	32	**13.59**	1.720	
	Total	3448	12.79	1.698	**.000**
Persistence	13-17	35	12.94	1.714	
	18-22	1099	12.80	1.845	
	23-27	643	13.02	1.875	
	28-32	479	13.11	2.027	
	33-37	344	13.04	1.881	
	38-42	313	13.01	1.968	
	43-47	226	13.18	1.919	
	48-52	165	13.36	1.735	
	53-59	112	**13.39**	1.881	
	60+	32	13.22	1.963	
	Total	3448	13.00	1.898	**.001**
Procrastination	13-17	35	12.60	2.428	
	18-22	1099	12.33	2.090	
	23-27	643	12.77	2.098	
	28-32	479	12.87	2.103	
	33-37	344	12.76	2.012	
	38-42	313	12.66	2.168	
	43-47	226	12.90	1.957	
	48-52	165	**13.00**	2.018	

	53-59	112	12.77	1.959	
	60+	32	12.47	1.934	
	Total	3448	12.65	2.090	**.000**
Time Management	13-17	35	12.97	2.051	
	18-22	1099	13.47	2.180	
	23-27	643	14.18	1.817	
	28-32	479	14.22	1.867	
	33-37	344	14.28	1.635	
	38-42	313	14.19	1.897	
	43-47	226	14.31	1.697	
	48-52	165	**14.38**	1.765	
	53-59	112	**14.38**	1.928	
	60+	32	14.13	2.028	
	Total	3448	13.98	1.970	**.000**
Locus of Control	13-17	35	9.91	1.669	
	18-22	1099	9.99	1.546	
	23-27	643	9.92	1.538	
	28-32	479	9.94	1.504	
	33-37	344	9.94	1.538	
	38-42	313	10.13	1.505	
	43-47	226	10.09	1.554	
	48-52	165	10.18	1.514	
	53-59	112	9.97	1.430	
	60+	32	9.72	1.301	
	Total	3448	9.99	1.529	.388

Institution Type: Significant differences did exist between the types of institutions and the factors of individual attributes on five of the six constructs measured. Baccalaureate colleges had statistically significant higher means on the categories of academic attributes, procrastination, persistence, and help seeking. Doctorate-granting universities had the highest means in time management.

		N	Mean	Std. Deviation	Sig.
Academic Attributes	Associates College	2059	13.53	1.890	
	Baccalaureate College	130	**13.90**	1.888	
	Corporation	5	12.40	1.517	
	Doctorate-granting University	621	13.65	1.882	
	Master's Colleges and University	711	13.48	1.861	
	Special Focus Institution	214	13.73	1.604	
	Total	3740	13.56	1.869	**.040**
Help Seeking	Associates College	2059	12.80	1.689	
	Baccalaureate College	130	**13.15**	1.645	
	Corporation	5	13.00	1.581	
	Doctorate-granting University	621	12.89	1.746	
	Master's Colleges and University	711	12.68	1.703	
	Special Focus Institution	214	12.96	1.477	
	Total	3740	12.81	1.690	**.025**
Persistence	Associates College	2059	13.14	1.895	
	Baccalaureate College	130	**13.33**	1.749	
	Corporation	5	13.00	1.225	
	Doctorate-granting University	621	12.92	1.828	
	Master's Colleges and University	711	12.80	1.931	

	Special Focus Institution	214	13.14	1.843	
	Total	3740	13.04	1.887	**.000**
Procrastination	Associates College	2059	12.82	2.056	
	Baccalaureate College	130	**13.12**	2.080	
	Corporation	5	13.00	2.345	
	Doctorate-granting University	621	12.50	2.044	
	Master's Colleges and University	711	12.42	2.110	
	Special Focus Institution	214	12.77	2.011	
	Total	3740	12.70	2.070	**.000**
Time Management	Associates College	2059	13.95	2.051	
	Baccalaureate College	130	14.30	1.928	
	Corporation	5	13.00	3.742	
	Doctorate-granting University	621	**14.38**	1.640	
	Master's Colleges and University	711	13.87	2.037	
	Special Focus Institution	214	14.07	1.890	
	Total	3740	14.02	1.982	**.000**
Locus Of Control	Associates College	2059	10.00	1.549	
	Baccalaureate College	130	9.92	1.560	
	Corporation	5	9.80	1.643	
	Doctorate-granting University	621	9.90	1.855	
	Master's Colleges and University	711	9.90	1.469	
	Special Focus Institution	214	10.12	1.470	
	Total	3740	9.97	1.585	.355

APPENDIX ONE

Schools with students represented in this analysis.

Adams State College	Air University	Air War College
Alamo - Northwest Vista College	Alamo - San Antonio College	Alamo - St. Philip's College
Albany Technical College	Altamaha Technical College	Alvin Community College
Amarillo College	American Sentinel University	Angelina College
Anne Arundel Community College	Anthem College Online	Argosy University
Arkansas State University Mountain Home	Art Institute of Atlanta	Athens State University
Athens Technical College	Atlanta Technical College	Auburn University Montgomery
Augusta Technical College	Bainbridge College	Baton Rouge Community College
Black and White	Blackhawk Technical College	Blinn College
Blue Ridge Community College	Brazosport College	Briarcliffe College
Brookdale Community College	Brookhaven College	Broward College
Brown College	California Baptist University	California State University, Fullerton
Capella University	Cedar Valley College	Central Georgia Technical College
Central New Mexico Community College	Century Community and Technical College	Chaminade University of Honolulu
Chattahoochee Technical College	Chattanooga State Technical Community College	Chesapeake College
Chicago State University	Chippewa Valley Technical College	Cisco Junior College
Clarian Health	Clark State Community College	Coahoma Community College
Cochise College	College of Coastal Georgia	College of DuPage
College of Southern Maryland	College of the Mainland	College Sector Committee for Adult Upgrading
Collin County Community College	Collins College	Colorado State University - Global Campus
Columbus State Community College	Columbus State University	Columbus Technical College
Compass Knowledge Group	Copiah-Lincoln Community College	Cuyahoga Community College
Dallas TeleCollege	Darton College	Davidson County Community College

Dekalb Technical College	Del Mar College	Delta College
Duke University School of Nursing	East Central Community College	East Central Technical College
East Mississippi Community College	Eastfield College	ECPI College of Technology
Edison State College	El Centro College	El Paso Community College
Empire State College	Flint River Technical College	Florida A & M University
Fox Valley Technical College	Front Range Community College	Gadsden State Community College
Galveston College	Gaston College	Gateway Community College
Gateway Technical College	Georgia Northwestern Technical College	Georgia Virtual Technical College
Georgia WebBSIT	Germanna Community College	Gordon College
Grays Harbor College	Grayson County College	Greenville Technical College
Griffin Technical College	Gwinnett Technical College	Hagerstown Community College
Harford Community College	Heart of Georgia Technical College	Highland Community College
Hill College	Hillsborough Community College	Hinds Community College
Holmes Community College	Horry-Georgetown Technical College	Houston Community College System
Howard College	Institute of Health Sciences	Int. Academy of Design and Tech - Chicago
Int. Academy of Design and Tech - Detroit	Int. Academy of Design and Tech - Las Vegas	Int. Academy of Design and Tech - Orlando
Int. Academy of Design and Tech - Sacramento	Int. Academy of Design and Tech - Schaumburg	Int. Academy of Design and Tech - Seattle
Int. Academy of Design and Tech - Tampa	International Academy of Design & Tech (Online)	International Academy of Design and Technology
International Distance Ed Certification Center	Itawamba Community College	ITT Technical Institute
Ivy Tech Community College	J. Sargeant Reynolds Community College	Jackson Community College
Jackson State University	Johnston Community College	Jones County Junior College
Kansas City Kansas Community College	Kaskaskia College	Kellogg Community College
Kilgore College	Kodiak College	Lake Michigan College
Lakes Region Community College	Lanier Technical College	Laredo Community College
Lee College	Literacy Council of Niagara West	Lone Star College System
Lubbock Christian University	Madison Area Technical College	Manchester Community College

McLennan Community College	Mid Michigan Community College	Mid-Plains Community College
Middle Georgia Technical College	Middlesex Community College	Midland College
Midlands Technical College	Mississippi Gulf Coast Community College	Mississippi State University
Mississippi Virtual and Community Colleges	Missouri College	Montcalm Community College
Montgomery College	Moraine Park Technical College	Moultrie Technical College
National Park Community College	National University College	Navarro College
New River Community and Technical College	Niagara College	Niagara County Community College
North Arkansas College	North Central State College	North Central Texas College
North Georgia Technical College	North Lake College	North Park University
Northeast Mississippi Community College	Northeast Texas Community College	Northern Wyoming Community College District
NorthWest Arkansas Community College	Northwest Mississippi Community College	Oakton Community College
Ogeechee Technical College	Ohio University	Okefenokee Technical College
Open University Malaysia	Ottawa University	Ouachita Technical College
Owens Community College	Panola College	Paul D. Camp Community College
PC ProSchools	Pearl River Community College	Pearson / Prentice Hall Publishing
Penn State World Campus	Phoenix College	Piedmont Community College
Pinellas Technical Education Centers	Placer County Office of Education	Prince George's Community College
Rhodes State College	Richland College	RQA Asia Pacific
Saint Francis University	Sandersville Technical College	Sanford Brown College - Atlanta
Sanford Brown College - Cleveland	Sanford Brown College - Fenton	Sanford Brown College - Houston
Sanford Brown College - Saint Peters	Sanford Brown College - San Antonio	Sanford Brown College - Vienna
Sanford Brown Institute - Dallas	Sanford Brown Institute - Ft. Lauderdale	Sanford Brown Institute - Jacksonville
Sanford Brown Institute - Milwaukee	Sanford Brown Institute - Monroeville	Sanford Brown Institute - Northloop
Sanford Brown Institute - Pittsburgh	Sanford Brown Institute - Tampa	Sanford Brown Institute - Trevose
Savannah Technical College	South Arkansas Community College	South Central College
South Florida Community College	South Georgia Technical College	South Plains College

South Texas College	Southeastern Technical College	Southside Virginia Community College
Southwest Georgia Technical College	Southwest Mississippi Community College	St. Louis Community College
State College of Florida, Manatee-Sarasota	Stephen F. Austin State University	Tallahassee Community College
Tarrant County College	Temple College	Texarkana College
Texas A & M - Commerce	Texas State Technical College Harlingen	Texas State Technical College Marshall
Texas State Technical College Waco	Texas State Technical College West Texas	Texas Woman's University
Three Rivers Community College	Trident Technical College	Trinity Valley Community College
Troy University	Tyler Junior College	Univ. System of GA Board of Regents - Education
Univ. System of GA Board of Regents - Military	Univ. System of Georgia Board of Regents	University of Nebraska at Kearney eCampus
University of Northern Colorado	University of Texas at Tyler	University of Texas of the Permian Basin
University of Washington	University of Wisconsin-Extension	Valdosta Technical College
Vatterott Educational Centers, Inc.	Victoria College	Virginia College
Washtenaw Community College	Wayland Baptist University	WEA Academy
West Georgia Technical College	Western Governors University	Western New Mexico University
Western Texas College	Western Wyoming Community College	Wharton County Junior College
Wichita Area Technical College	Wichita State University	York Technical College
Yorktown University		

APPENDIX TWO

Literature Review Resources

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