Technology use to enhance student learning: A case study of the Colorado Mountain College

Margaret L. Gaddis

Technology use to enhance student learning: A case study of the Colorado Mountain College

This report details the findings of concurrent faculty and student surveys designed to explore the use of technology in educational settings at a regional community college system in Colorado, USA. Scholarly research indicates that technology adoption promotes the academic success of diverse students and improves the quality of existing educational offerings (Allen & Seaman, 2013; Courts & Tucker, 2012; Lertwanasiriwan, 2010; Simkins, 2002). The long-term goal of this research project is to enhance educational technology integration to increase student learning in discipline content knowledge and the technology literacy skills required for success in the 21st century workplace. The results presented here describe the current technology adoption climate among Colorado Mountain College (CMC) faculty. These results also describe student perceptions of the value of this technology adoption to their learning experience. Administrators can use these results to ascertain the current use value of the technology the organization already supports. These results can provide insight regarding professional development opportunities for faculty to promote increased use of educational technologies, with the goal of technology integration over time. These results can also identify gaps between student perceptions of and preferences for educational technology and faculty technology use.

Research indicates that educational technology facilitates learning by enriching the course content with multimodal resources that provide opportunities for students to engage with the course content in different ways (Laurillard, 2013, Simkins, 2002). Mathematics education has seen a productive shift from didactic instruction to student-centered, constructivist approaches (Abdulwahed, Jaworski, & Crawford, 2012) and computer-assisted instruction (Ornstein, Pajak, & Ornstein, 2015). Technology has transformed language learning (Butler-Pascoe, 2011). Research indicates that participants gain knowledge from online self-learning

modules (Gagnon et al., 2015). Instructional video training for pediatric health care professionals (Cheng, Lang, Starr, Pusic, & Cook, 2014) and nurses (Serna et al., 2016) increased their knowledge and procedural performance. Participants were more ready to engage in self-directed learning after an online training experience (Gagnon et al., 2015). Students for whom attending school is not their primary daily task benefit from asynchronous instruction because it allows for more flexible learning (Johnson, Becker, Estrada, & Freeman, 2014).

The use of technology in numerous educational settings is well-documented, but technology adoption and technology integration are not the same phenomenon. Technology adoption concerns the application and ease of technology use while technology integration concerns the fundamental integration of technology into educational philosophy, planning, and implementation (Russell, 2014; Keengwe, Onchwari, & Onchwari, 2009). A precursor to technology integration is the holistic acceptance of technology use as both an educational tool and a learning outcome (Courts & Tucker, 2012). Technology adoption and integration are challenging concepts for some educators because they imply that the traditional educational framework is no longer the only effective means to educate students (Johnson, Wisniewski, Kuhlemeyer, Isaacs, & Kryzkowski, 2012).

Faculty may be encouraged to use technology in the classroom, but an organization's failure to explain the andragogical benefits of its use leave faculty without solid evidence for its efficacy. Professional development can remedy this outcome by building a learning community among the faculty in which they can share best practices and experiences (Johnson, Wisniewski, Kuhlemeyer, Isaacs, & Kryzkowski, 2012). This is important because faculty on the whole are not as technologically savvy as students (Ajjan & Hartshorne, 2008). When technology integration is achieved, it expands the technological knowledge of the faculty and students

together, thereby strengthening the 21st century skills of both groups. The research described in this report provides a current perspective on technology adoption by faculty and students, upon which technology integration efforts can grow.

Colorado Mountain College

Colorado Mountain College is a rural, in-district community college system with 11 campuses in the intermountain region of Colorado spanning 12,000 square miles and serving over 20,000 students ("FAQ," 2016). CMC ranks in the top 13% of community colleges in the U.S. CMC offers fives bachelor's degrees, which have been recognized as the third most affordable bachelor degrees in the U.S. CMC is supported by property taxes, governed by a Board of Trustees, and accredited by the Higher Learning Commission ("CMC Snapshot," 2016). Over 20% of CMC students are non-white, 17% of whom are Hispanic students ("FAQ," 2016).

The strategic plan for Colorado Mountain College includes five goals: student success, teaching and learning, access, community and economic development, and organizational effectiveness ("CMC Strategic plan," 2014-2018). The use of technology addresses two of these goals, student success and teaching and learning. According to the Strategic plan, CMC will "promote student success with appropriate student support services that accommodate the needs of these students." CMC will "provide excellent learning opportunities," by "improving the quality of existing educational offerings" ("CMC Strategic plan," 2014-2018).

Technology integration has the potential to meet these strategic goals. The research presented here provides a snapshot of current technology use and student perception of its use. Both are measures that can be used to evaluate strategic goal attainment. Colorado Mountain College is a leader in innovation, but tracking and analyzing the specific technology-based

learning innovations employed by faculty is challenging due to the multiple campus design of the college and the sheer volume of instructors teaching for the college.

This project involved the release of two surveys. A faculty survey solicited information about educational technology used and professional demographics. A student survey solicited information about student perceptions of the effectiveness of technology used by their professors. The student survey also collected information about student progress at CMC. While only one survey iteration was possible before the project deadline, these results are best perceived as a pilot initiative for a longitudinal study in which additional analytical approaches are employed to quantify and describe technology use and integration among CMC faculty and the student-perceived value of these initiatives.

Methods

Two surveys were designed to investigate technology use by CMC faculty. One was sent to CMC faculty (Appendix A) and the other to CMC students (Appendix B). Both were disseminated by campus email servers as well as posted on the organizational internal web portal called Basecamp in the summer of 2016. Responses were collected for a one month period. The intention is for this survey to be offered annually to collect longitudinal data about the technology adoption and integration process at CMC. This report details the results of the first survey release.

The faculty survey included a series of questions that collected information about faculty use of educational technology and teaching experience. The student survey collected information about students' perceptions about how technology influenced their learning, their preferences for specific technology tools, and their student progress. Both surveys included closed response questions for which respondents could select multiple responses if appropriate. These questions

also included an opportunity to write in a response to note a technology tool that was not one of the options presented by the survey. This was an important design feature because many of the questions provided a common list of technology tools, however, it was possible that faculty used tools beyond those choice options.

Informed consent was delivered through the survey. The informed consent was the first question of the survey and if respondents agreed, they were prompted to respond affirmatively and continue with the survey. Respondents were instructed to exit the survey if they did not agree with the informed consent process. No demographic or personally identifying information was collected. It is possible that a respondent could have taken the survey more than once, but there was no incentive to take the survey and therefore no incentive to take it more than once.

Faculty Survey Results

104 faculty members responded to the survey. Respondents have been teaching in higher education for 10 or more years (65%), six to nine years (18%), three to five years (13%), and zero to two years (4%). 31% have taught at CMC for 10 or more years, 18% for six to nine years, 19% for three to five years and 12% for zero to two years. Faculty respondents teach two to three non-lab courses (59%), two to three lab courses (27%), one non-lab course (25%), one lab course (9%), or they are not teaching every semester (3%).

A technology tool is a digital resource that is used to enhance the classroom learning experience. There was no statistical difference in the number of technology tools used as a function of adjunct or full-time status ($t=1.03$). There was no statistical difference in the number of technology tools used as a function of years teaching in higher education ($t=0.21$). The majority of all faculty use up to five technology tools per semester, but not more.

Regarding technology tools that are not associated with the textbook, faculty respondents used websites (90%), instructional videos and podcasts (74%), slide presentations (63%), and web conferencing (23%), Softchalk lessons (12%), and Google communities (12%). Other tools used with lesser frequency included blogs, LinkedIn groups, and Facebook groups. Only one respondent noted using a twitter feed. Faculty members stopped using a technology tool because it was too time-consuming to set-up (57%), not an effective learning tool in their opinion (49%) or as determined by their students (35%), too difficult to integrate into the LMS (29%), or too costly (8%).

CMC faculty respondents have produced their own slide presentations (81%), websites (42%), web conferences (30%), Softchalk lessons (18%), and wiki pages (15%). Other tools produced included blogs, Google communities, Facebook groups, and LinkedIn groups. 13% of faculty respondents have never produced a technology tool. When faculty respondents produce media, 76% publish these resources to the LMS only, 16% publish them in the LMS and on the Internet, and 12% just publish them on the Internet.

Faculty respondents learned how to use a technology tool by teaching themselves using resources proprietary to the tool (70%), by taking CMC professional development workshops (60%), by learning from a colleague (51%), by watching videos or tutorials produced by other users (48%), or by taking some other college or university's professional development opportunities (32%).

100% of faculty respondents have used Canvas, the Learning Management System (LMS) used by Colorado Mountain College. Respondents have also used Blackboard (76%), D2L/Brightspace (17%), Moodle (17%), Pearson eCollege (9%), and Google Classroom (8%). Respondents wrote in Sakai, Schoology, Angel, Vista, WebCT, and MacMillan LaunchPad.

There was a statistical difference in the number of instructors who use the LMS while teaching in the classroom when instructors are categorized according to their teaching experience. 83% of instructors who have been teaching for six or more years use the LMS in the classroom while only 31% of instructors who have been teaching for up to five years use the LMS in the classroom ($t=3.51$, $P=<0.05$). There is no statistical difference between adjunct and full-time instructors with respect to their use of the LMS when teaching in the classroom ($t= 1.04$). Regardless of classification, faculty respondents used the LMS to manage the gradebook (87%), for assignment submission (82%), to curate documents (68%), to administer tests and quizzes (66%), and to run discussions (61%).

24% of faculty use a digital textbook. There was no statistical difference between adjunct and full-time instructors with respect to their use of an electronic textbook ($t = 0.36$). There was no statistical difference between years teaching with respect to their use of an electronic textbook ($t = .074$). 24% of faculty respondents don't use a textbook at all. Among faculty who do use a textbook, some also used slide presentations (50%), instructional videos (49%), publisher testbanks (46%), lecture outlines (28%), adaptive study programs (14%), and/or virtual labs (9%) provided by the textbook publisher.

Student Survey Results

57 students responded to the survey. 31% of respondents were freshmen, 28% were juniors, and 21% were sophomores or seniors. The majority of respondents have been at CMC one to three semesters. 65% of respondents take online classes and 80% take face-to-face courses. 39% of respondents have taken one to three online classes, 34% have never taken an online course, 12% have taken four to six online courses, and 7% have taken either seven to nine online courses or 10 or more online courses. 44% have taken one to three classroom-based

courses, 27% have taken 10 or more face-to-face courses, and 17% have taken no face-to-face courses. A hybrid course is one in which some of the instruction is online and some is in the classroom. 61% of respondents have taken no hybrid courses, 34% have taken one to three hybrid courses, and two students total have taken more than three hybrid courses. 83% of respondents have never taken an interactive video course (IVS), 17% have taken one to three IVS courses and no students have taken more than three IVS courses. 53% of respondents have taken no non-credit courses while 30% have taken one to three non-credit courses. A total of seven students have taken four or more non-credit courses. 33% of respondents have taken 10 or more credit courses, 30% have taken one to three credit courses total, and 28% have taken no credit courses. The majority of students (58%) have been enrolled at CMC for one to three semesters.

93% of students think that technology enhances their learning. Student comments addressed how technology helps them learn because it facilitates self-paced learning and "makes going to school more time manageable." Technology "increases interaction with the subject matter," is "available anywhere," and makes "it easier to do research." Several students used the term "information access" or "access to information" when describing how technology enhances their learning. Several students discussed how technology allows for more communication between students and with the instructor, which they noted enhances their learning. Only one student expressed the sentiment that technology was not facultative to his/her learning. This student described how lecture-based instruction is multimodal and accommodates his/her learning.

When asked what their favorite technology tools are, students responded instructional videos (69%), websites (62%), slide presentations (56%), and Softchalk lessons (13%), Google

communities (13%), Facebook groups (13%), and wiki pages (10%). Only two students selected blogs, one selected LinkedIn, and none selected twitter feeds.

Discussion

In general, these results suggest that years teaching may have an effect on technology use, but adjunct versus full-time status do not affect faculty use of technology tools. The literature suggests that the use of technology may be related to instructor gender (Lewis, Fretwell, Ryan, & Parham, 2013) and attitude and behavioral control (Ajjan & Hartshorne, 2008). However, this survey did not probe the motivations or personal demographics of faculty. These would be valuable metrics to include in future research.

The majority of respondents were adjunct faculty. 35 respondents were full-time faculty. There are a total of 103 full-time faculty members at CMC, therefore the response rate for full-time faculty is approximately 30%. 71% of courses at CMC are taught by adjuncts. 63% of survey respondents were adjuncts. These percentages are well aligned and therefore likely represent the teaching population with some degree of accuracy. The exact number of adjuncts across all 11 campuses was unknown to the researcher due to the dynamic and ever-changing number of adjuncts at any one time. Furthermore, there are many fewer adjunct instructors working in the summer semester so the respondent percentage rate of adjuncts might be affected by the summer delivery of this survey.

Faculty apparently learn when they participate in professional development courses. For example, faculty produce and use softchalk and web conferencing more than any other technology tools aside from instructional videos, websites and slide presentations. The CMC Office of Innovations offers workshops on Softchalk and web conferencing. While this study did not connect the number of respondents who took professional development to the number of

respondents who reported making these technology tools, it is a reasonable assumption that the high use of these technology tools is related to professional development opportunities. Adding survey questions that identified professional development participation would provide valuable information about the efficacy of these programs.

The overwhelming sentiment from students was that technology enhances student learning. This suggests that the organization's efforts to offer and support educational technology are valuable to the student population. Student preferences for technology tools are closely aligned with professors' efforts to employ technology tools. This begs the question: do students like what they have at their disposal presented by professors, or is it that professors know what their students want? For example, no students liked to use twitter in an educational context, but then only one faculty member reported using twitter in an educational context.

There was a rather large contingency of students (11) who reported never taking a credit course. This could be due to the fact that the survey was disseminated during the summer months. This could skew the results as technology used on the whole might vary between non-credit and credit courses. In the future of this longitudinal study, it might be more appropriate to release the survey during the fall or spring semester to ensure a representative student sample is captured.

The design of the survey instruments was intentionally descriptive, but in hindsight, it would be more powerful to transform questions into numeric scale response questions to facilitate statistical analysis. However, this modification might make the survey prohibitively long unless specific technology tools were identified as important foci to the organization. This would reduce the number of technology tools investigated. In general, longitudinal adoption of this survey would be facilitated by increased collaborative involvement of other organization

employees to ensure that the survey is probing technology integration information that is relevant to organizational policy decision making.

Considerations for Future Research

Organizations should move towards a coordinated analysis of technology integration within the organization. Successful technology use must be accompanied by ongoing scholarly debate and evaluation. Since new technologies tools are always becoming available, the key to sustainable technology integration is a community-wide commitment to its effectiveness and continuous improvement. The organization already works to promote educational technology, but the reflective practices are not inherent to the current practice. This creates a false environment in which faculty are trying to reach a steady state in which they conquer the available technology and move on. The reality is that technology integration is a continuous process and its success is assured through professional partnership and engagement. At the very least, the annual engagement of this survey will keep the conversation about technology use and integration on the table for review and conversation.

References

Ajjan, H., & Hartshorne, R. (2008). Investigating faculty decisions to adopt Web 2.0 technologies: Theory and empirical tests. *The Internet and Higher Education, 11(2),* 71-80.

Allen, I. E., & Seaman, J. (2013). *Changing course: Ten years of tracking online education in the United States*. Retrieved from Online Learning Consortium: http://onlinelearningconsortium.org/survey_report/changing-course-ten-years-tracking-online-education-united-states/

Butler-Pascoe, M. E. (2011). The history of CALL: The intertwining paths of technology and second/foreign language teaching. *International Journal of Computer-Assisted Language Learning and Teaching, 1(1),* 16-32.

Cheng, A., Lang, T. R., Starr, S. R., Pusic, M., & Cook, D. A. (2014). Technology-enhanced simulation and pediatric education: A meta-analysis. *Pediatrics, 133(5),* e1313-e1323.

CMC Snapshot. (2016). Retrieved from http://coloradomtn.edu/about-cmc/cmc_snapshot/

Courts, B., & Tucker, J. (2012). Using technology to create a dynamic classroom experience. *Journal of College Teaching & Learning, 9(2),* 121-128.

Frequently asked questions (FAQ) about CMC. (2016). Retrieved from http://coloradomtn.edu/admissions/admissions_faqs/#In_district

Gagnon, J., Gagnon, M. P., Buteau, R. A., Azizah, G. M., Jette, S., Lampron, A., ... Reviriego, E. (2015). Adaptation and evaluation of online self-learning modules to teach critical appraisal and evidence-based practice in nursing: An international collaboration. *Computers Informatics Nursing, 33(7),* 285-294.

Johnson, L., Becker, S., Estrada, V., & Freeman, A. (2014). *Horizon Report: 2014 Higher Education*. Retrieved from New Media Consortium: http://www.editlib.org/p/130341/

Johnson, T., Wisniewski, M. A., Kuhlemeyer, G., Isaacs, G., & Kryzkowski, J. (2012). Technology adoption in higher education: Overcoming anxiety through faculty bootcamp. *Journal of Asynchronous Learning Networks*, *16(2)*, 63-72.

Keengwe, J., Onchwari, G., & Onchwari, J. (2009). Technology and student learning: Towards a learner-centered teaching model. *AACE Journal*, *17(1)*, 11-22.

Laurillard, D. (2013). *Teaching as a design science: Building pedagogical patterns for learning and technology*. New York, NY: Routledge.

Lertwanasiriwan, C. (2010). *The effects of a technology-enhanced inquiry instructional model on students' understanding of science in Thailand* (Doctoral dissertation). Retrieved from http://repositories.lib.utexas.edu/bitstream/handle/2152/18445/lertwanasiriwanc79440.pdf?sequence=2

Lewis, C. C., Fretwell, C. E., Ryan, J., & Parham, J. B. (2013). Faculty use of established and emerging technologies in higher education: A unified theory of acceptance and use of technology perspective. *International Journal of Higher Education*, *2(2)*, 22-34.

Lizzio, A., Wilson, K., & Simon, R. (2002). University students' perceptions of the learning environment and academic outcomes: Implications for theory and practice. *Studies in Higher Education*, *27(1)*, 27-52.

Reaching new heights: Strategic plan 2014-2018. (2014-2018). Retrieved from http://coloradomtn.edu/strategic-plan/

Romero, M., & Barberà, E. (2011). Quality of e-learners' time and learning performance beyond quantitative time-on-task. *The International Review of Research in Open and Distributed Learning*, *12(5)*, 125-137.

Russell, S. M. (2014). *Technology integration for technical and vocational faculty in North Carolina community colleges* (Doctoral dissertation). Available from Proquest Dissertations.

Serna, R. W., Foran, M. M., Cooke, C., Hurd, K. E., Tello, A. J., Vangapalli, R., & Hamad, C. D. (2016). Teaching Discrete Trial Training: The effects of asynchronous computer-based instruction on live implementation. *Journal of Special Education Technology*, *30(4)*. Retrieved from http://jst.sagepub.com/content/early/2016/03/01/0162643416633334.full.pdf+html

Simkins, M. (2002). *Increasing student learning through multimedia projects*. Alexandria, VA: Association for Supervision and Curriculum Development.

Zucker, A. A., & Light, D. (2009). Laptop programs for students. *Science*, *323(5910*), 82-85.

Appendix A: Faculty Survey

Introduction

Colorado Mountain College is a leader in innovation, but tracking and analyzing the specific technology-based learning innovations employed by faculty is challenging due to the multiple campus design of the college and the sheer volume of instructors teaching for the college. This project involves the release of two surveys. A faculty survey solicits information about technology used. A student survey solicits information about student perceptions of the effectiveness of technology used by their instructors. This initiative will provide a rich summary of technologies currently employed by faculty as well as provide a glimpse of student perceptions of technology use and its facilitation of their learning.

Faculty Survey

1. What Learning Management Systems (LMS) have you used? [check all that apply]
    a. Canvas
    b. Blackboard
    c. D2L/Brightspace
    d. Pearson eCollege
    e. Moodle
    f. Google classroom
    g. Other, please name here:
2. A **technology tool** is a digital resource that you use to enhance your teaching. How many technology tools do you use in a single class per semester, not including the LMS?
    a. 1
    b. 2-5

   c. 6-8
   d. 9-10

3. Do you use the LMS when you teach in the classroom?
   a. Yes
   b. No
4. If you use the LMS when you teach in the classroom, how do you use it? [check all that apply]
   a. To curate documents
   b. To run discussions
   c. To administer tests and quizzes
   d. For assignment submission
   e. To manage the gradebook
   f. Other, please describe:
5. Do you use an electronic textbook?
   a. Yes
   b. No
6. If you use a textbook (digital or paper), which of the following do you also use? These are often available on the publisher's website. [check all that apply]
   a. I don't use a textbook
   b. testbanks
   c. adaptive study program
   d. lecture outlines
   e. slide presentations

f. instructional videos

g. virtual labs

7. Which of the following external technology tools do you use on a regular basis, or plan to use on a regular basis (even though at the time of survey you may have used it only once to try it out)? If you used a tool only once and chose not to use it again, do not check it here [check all that apply]

    a. Instructional videos/ podcasts

    b. Slide presentations

    c. Softchalk lessons

    d. Web conferencing

    e. Blogs

    f. Websites

    g. Wiki pages

    h. Twitter feeds

    i. Google communities

    j. LinkedIn groups

    k. Facebook groups

    l. Other, please name here:

8. If you stopped using a technology tool, why did you stop? [check all that apply]

    a. Too difficult to integrate into the LMS

    b. Was not an effective learning tool, in your opinion

    c. Was not an effective learning tool, as determined by your students

    d. Cost too much money

e. Too time-consuming to set-up

f. Other, please describe:

9. What kinds of technology tools have you produced at least once? [check all that apply]

a. Instructional videos/ podcasts

b. Slide presentations

c. Softchalk lessons

d. Web conferencing

e. Blogs

f. Websites

g. Wiki pages

h. Twitter feeds

i. Google communities

j. LinkedIn groups

k. Facebook groups

l. I have never produced a technology tool

m. Other, please name here:

10. How did you learn to use a technology tool? [check all that apply]

a. CMC professional development

b. Other college or university professional development

c. Self-taught from publisher resources

d. Internet videos or tutorials produced by a user, not the publisher

e. A colleague

f. Other, please describe:

11. Do you publish your media? [check all that apply]
    a. In the LMS
    b. On the web
    c. In the LMS and on the web
    d. Other, please describe:
12. How many years have you been teaching in higher education?
    a. 0-2 years
    b. 3-5 years
    c. 6-9 years
    d. 10 or more years
13. How many years have you been teaching at Colorado Mountain College?
    a. 0-2 years
    b. 3-5 years
    c. 6-9 years
    d. 10 or more years
14. Approximately how many courses do you teach per fall and spring semesters at CMC? [check all that apply]
    a. not always teaching every semester
    b. 1 non-lab course
    c. 2-3 non-lab courses
    d. 1 lab course
    e. 2-3 lab courses

15. Approximately how many course do you teach per fall and spring semester at CMC and any other college or university combined?
    a. not always teaching every semester
    b. 1 course
    c. 2-4 courses
    d. 5-7 courses
    e. 8-10 courses
    f. More than 10 courses
16. How many years have you taught online courses?
    a. 0-2 years
    b. 3-5 years
    c. 6-9 years
    d. 10 or more years
17. Are you an adjunct instructor or a full-time instructor?
    a. Adjunct
    b. Full-time

Thank you for your participation.

Appendix B: Student Survey

Introduction

Colorado Mountain College is a leader in innovation, but tracking and analyzing the specific technology-based learning innovations employed by faculty is challenging due to the multiple campus design of the college and the sheer volume of instructors teaching for the college. This project involves the release of two surveys. A faculty survey solicits information about technology used. A student survey solicits information about student perceptions of the effectiveness of technology used by their instructors. This initiative will provide a rich summary of technologies currently employed by faculty as well as provide a glimpse of student perceptions of technology use and its facilitation of their learning.

Student Survey

1. A **technology tool** is a digital resource that instructors use to facilitate your learning. What tech tools are your favorites? [check all that apply]
    a. Instructional videos/ podcasts
    b. Slide presentations
    c. Softchalk lessons
    d. Blogs
    e. Websites
    f. Wiki pages
    g. Twitter feeds
    h. Google communities
    i. LinkedIn groups
    j. Facebook groups

    k. Other, please name here:

2. Do you think technology enhances your learning?

    a. Yes

    b. No

3. How does technology enhance your learning? Please describe here, or explain why it does not enhance your learning.

    [open response]

4. What is your class year?

    a. Freshman

    b. Sophomore

    c. Junior

    d. Senior

5. How many semesters have you been enrolled at CMC?

    a. 1-3 semesters

    b. 4-6 semesters

    c. 7-9 semesters

    d. 10-12 semesters

    e. More than 12 semesters

6. Do you take courses online?

    a. Yes

    b. No

7. Do you take courses in the physical classroom (ie face-to-face courses)?

    a. Yes

b. No

8. How many online courses have you taken?
    a. 0 courses
    b. 1-3 courses
    c. 4-6 courses
    d. 7-9 courses
    e. 10 or more courses
9. How many face-to-face courses have you taken?
    a. 0 courses
    b. 1-3 courses
    c. 4-6 courses
    d. 7-9 courses
    e. 10 or more courses
10. How many hybrid courses have you taken? Hybrid courses have either the lab or lecture component online and the other component face-to-face.
    a. 0 courses
    b. 1-3 courses
    c. 4-6 courses
    d. 7-9 courses
    e. 10 or more courses
11. How many Interactive Videos Courses (IVS) courses have you taken?
    a. 0 courses
    b. 1-3 courses

c. 4-6 courses

d. 7-9 courses

e. 10 or more courses

12. How many non-credit courses have you taken in total?

a. 0 courses

b. 1-3 courses

c. 4-6 courses

d. 7-9 courses

e. 10 or more courses

13. How many credit courses have you taken?

a. 0 courses

b. 1-3 courses

c. 4-6 courses

d. 7-9 courses

e. 10 or more courses

Thank you for your participation.