REPORT

Educating the interdisciplinary civilian airman

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Abstract Competency Based Education (CBE) is becoming increasingly popular with Department of Defense (DoD) training and education. Air University, located at Maxwell Air Force Base (AFB) Alabama, recently identified CBE as a key factor for consideration in future training. This article discusses Air Force Competencies, analyzes the evaluation of competencies, and transfer of learning. The Civilian Associate's Degree, currently under beta testing, is discussed as an example of the need to consider transfer of learning with respect to institutional competencies. Beta testing of the Associate of Applied Science Degree in Air Force Leadership and Management Studies is meant to pave the way for the development and implementation of Civilian Airman training. Based on Civilian Associate's Degree (CAD) Beta Testing student data, our research examines how CAD faculty can best capture professional interdisciplinary knowledge and experiences present in incoming students. In turn, leadership and management theories will add to the student knowledge and experience. This paper is an effort to capture the utilization of previous professional student experiences while developing and updating course curriculum based upon research and Beta Test student data.

Keywords: *competency based education, transfer of training, transfer of training, civilian airman development*

Introduction

In the Air Force, military members have access to relevant degree programs but there are no analogous undergraduate educational opportunities available to Civilian Airmen. While efforts are made to integrate Civilian Airman into many of the professional development and educational programs associated with Professional Military Education (PME) the number of seats available is quite small. The CAD program, using competency- based methods, is intended to address this lack of opportunity.

The Civilian Associate's Degree program will be administered through the Ira C. Eaker Center for Professional Development on Air University's main campus at Maxwell Air Force Base, Alabama. As a federal degree-granting institution, Air University may not offer degrees and course content that could be obtained through civilian institutions. Therefore, students will complete 30 credit hours by transfer or credit-by-exam and 30 hours of instruction through Air University-provided synchronous online courses. This program will emphasize learning outcomes focused on airpower studies, military leadership, and defense management disciplines to build knowledge and skills essential for Air Force civilian leaders.

The courses developed to provide this educational opportunity are hybrid in design. The course incorporates several key elements necessary to meet the specific needs of the adult learner, the CAD program offers the flexibility of online delivery, while ensuring engagement through synchronous webinars to reach the affective domain, and to ensure each course addresses the primary competencies identified by both academia and Air Force senior leaders.

Online learning affords additional opportunities for demonstrating learning and achievement that go beyond those possible in a face-to-face setting (Krause, Dias, & Schedler, 2015.) Students from multiple locations enrolled in the CAD Beta Test have been able to complete mission requirements through a pilot test of the CAD program. Adobe Connect synchronous webinars are offered during lunch hours, and after normal duty hours. Many students participate in the webinars at their desks while at work, at home, or even on their phones. One student, a firefighter, actually participated by using the adobe application on his phone as the passenger of a vehicle responding to an emergency call.

Competency based education (CBE) seeks to evaluate a student's understanding of a topic through demonstrated mastery of the specific kills or learning outcomes related to the topic (U.S. Department of Education, nd.). The CAD program chose this approach because it most closely mirrors the type of learning the military cohort receives. This approach could integrate the Civilian Airman into the whole of the force as the method of learning and skills required will then be similar. Moreover, the professional Civilian Airman benefits from online learning because of their normal work schedule. With that, CBE is a method of further enhancing online learning for professionals. For example, Dubois (1993) cited CBE as a best practice for leading interdisciplinary organizational change.

Air Force Civilian Airman come to postsecondary education degree programs with a wide range of abilities, experiences, and previous learning. Thus, preparing these adult learners for the roles they will encounter in the workplace is a challenge as there are varied ways they serve in their respective organizational environments (Frush, 2014). Annex 1-1, Force Development, notes how competencies are attributes an individual possesses to allow for successful and consistent performance of tasks under specified conditions, or meeting a defined standard of performance (Fadok, 2006). These competencies enable Airmen to perform their jobs and contribute to the overall success of the Air Force.

Air Force Institutional competencies are broken down into three categories: personal, people/team, and organizational. 8 competencies and 25 sub-competencies are defined throughout Air Force Doctrine, as shown in Table 1.

Table 1. Air Force Competency List (Fadok, 2006)

Category	Competency	Sub-Competency
Personal	Embodies Airman Culture	Ethical Leadership
		Followership
		Warrior Ethos
		Develops Self
	Communicating	Speaking and Writing
		Active Listening
People/Team	Leading People	Develop and Inspire Others
		Takes Care of People
		Diversity
	Fostering Collaborative Relationships	Builds Teams and Coalitions
		Negotiating
Organizational	Employing Military Capabilities	Operational and Strategic Art
		Leverage Technology
		Force Capabilities
		Crisis Response
	Enterprise Perspective	Structure and Relationships
		Government Organization and Processes
		Global, Regional, and Cultural Awareness

		Strategic Communication
	Table 1. (continued)	
Category	Competency	Sub-Competency
	Managing Organizations and Resources	Resource Stewardship Change Management Continuous Improvement
	Strategic Thinking	Vision Decision Making Adaptability

Traditionally institutional competencies are developed over time and are tied to professional military education. However, this process can be accelerated through the provision of the specific mission oriented competencies outlined above. Further, Voorhees (2001) noted the advantages of linking and then tracking the desired specific learning outcomes as derived from program mission statements (pg. 181).

Individuals and their relative experiences are different; thus, the learning experiences and resulting competencies developed are different, yet the goal remains the same: developing each Airmen with the skills identified above. Therefore we had to answer the question: How can this be achieved if every individual brings a differing suite of experiences to the table? The short answer is a program designed specifically for Civilian Airman that is flexible enough to adjust adult learning methodologies based on the experiences of a particular student cohort. This is the charter for the Civilian Associate Degree Program.

The Assessment & Selection: Competencies section of the Office of Personnel Management Website defines a competency as a measurable pattern of knowledge, skills, abilities, behaviors, and other characteristics needed by an individual to perform work roles or occupational functions successfully. Competencies specify the "how" of performing job tasks, or what the person needs to do the job.

Report

Civilian associate's degree

The Associate of Applied Science Degree in Air Force Leadership and Management Studies is a two-year program offered by the USAF (United States Air Force) Personnel Professional Development School. AF civilians who are competitively selected for this program will attend virtual classes while still performing their primary duties at home station. The Civilian Associate Degree Program (CADP) consists of a curriculum of ten online courses in Airpower, Leadership, and Management (30 credit hours) taught through an instructor- facilitated e-learning methodology along with an additional 30 credit hours of general studies and program-related electives that students will complete through Air Force funded credit-by- exam College-Level Examination Program Subject Standardized Tests (DSST) and/or through transfer credit.

Below are the basic eligibility requirements for CAD applicants:

Permanent full-time Appropriated Fund (APF) Air Force civilians in any grade
Minimum of two years of federal civil service by 1 May
Must have a high school diploma, GED or equivalent
Must have received an acceptable rating on most recent performance appraisal
May have some college credit, but cannot have been awarded a post-secondary degree from a regionally accredited two-or-four-year college or university
Must coordinate supervisor agreement to provide access to a computer for schoolwork and up to 3 hours per week of duty time for class attendance

Civilian Associate's Degree Core course flow for year one includes: History and Heritage of the Air Force, Professionalism in the Air Force, Foundations of Leadership, Intro to Management, and Principles of Leadership I. Year two includes: Thinking, Logic, and Decision Making, Conflict Resolution, Organizational Culture, Process Improvement, and Principles of Leadership II.

Student demographics

Civilian Associate's Degree Beta Test students brought a variety of experiences to the interdisciplinary program. Foundations of Leadership was beta tested first, and was made up of 10 students, with an average age of 42 years old. The students had an average of 13 years of experience as a civil service member, and had taken an average of seven college courses upon entrance to the CAD program. Two of the students held the title of director or higher, and three had less than two years of civil service experience. Five of the initial students had prior experience as active duty Air Force or Army. Due to the nature of the beta test, two initial students already had completed an associate level degree.

Benefits and challenges of online learning

Two of the CAD Beta Test students noted how they needed an AS degree to become eligible for promotion. Online learning is a means by which a professional can advance their career. The CAD program is geared towards the adult professional worker. Civil Service workers put in at least 40 hours of work per week, and the CAD program requires students to be available for two different one and a half hour synchronous learning sessions per week. The program is set up where students can work with their supervision to gain permission for live, online webinars before, during, or after the work day. This allows for students around the world to select the best time to learn, based upon their individual time zone and mission requirements. Combined with interactive, synchronous webinars, students also demonstrate mastery of student learning outcomes via discussion board and learning lab posts.

Transfer of learning

Van Doom & Van Doom (2014) argue that the pedagogical paradigm shift in higher education to 24-hour learning environments, encompassing several delivery formats including online courses, blended/hybrid designed courses, and the traditional face-to-face (f2f) lecture classes have increased student access and engagement into global lifelong learning. This argument suggests these shifts do not merely offer access for lifelong learning they make individual lifelong learning necessary for organizations to remain sustainable. Since lifelong learning has become mandatory it is incumbent upon the organization to provide the best possible educational solution that meets the needs of the learner and the organization. In other words, transfer of learning is a combined effort between the learner and the designers of the educational offering.

Mestre (2005) notes how transfer of learning is a term that describes a situation where information learned at one point in time can influence performance regarding information encountered at a later point in time. Transfer of learning can take place in the forms of positive and negative transfer. This is dependent upon whether the context enhances (positive) or undermines (negative) the learned performance in another context (Perkins & Salomon, 1992).

Gagne (1962) paved the way with studies on military training, research, and instructional systems development, examining the most effective ways to train military personnel, as well as how to utilize knowledge gained from both personal and professional development. He was recruited by the Air Education and Training Command due to his Instructional Systems Development (ISD) expertise in the 1990s. His research did not explore individual

differences, rather Gagne focused on design of instruction. This research helped further education for military members by focusing on skillsets required for mission accomplishment (Gagne, 1962).

Blume et al. (2010) asserted that transfer of learning consists of two dimensions; generalization and maintenance. Generalization concerns the extent to which knowledge or a particular skill acquired in a learning setting can be applied in a different setting, such as the workplace. Maintenance involves the extent to which a learning experience is maintained over a period of time (de Rijdt, Stes, van der Vlueten & Dochy, 2012). Not only are these two dimensions significant as they relate to transfer of learning they are the critical consideration in the adult learning sphere. In the adult learning sphere transfer of learning is not linear as each experience is a learning event and thus must be incorporated into an overall gain in knowledge, increases in critical thinking, and skills. How that is accomplished is the overarching role of education; in this case, each faculty member is the conductor or facilitator of part of that process. Yet, returning to the original issue, framing the experiences that students bring to enhance learning is no simple task. The idea of presenting information solely via concrete examples may lead to mental representations that are overly bound to a particular context. This could interfere with a person's ability to recognize an opportunity to transfer relevant knowledge (Day & Goldstone, 2012).

For the CAD program, there are multiple competing demands that must be addressed to ensure transfer of learning does indeed take place. First, one must remember that despite the advancing capacity of information and communication technology (ICT) to deliver instruction, the mere use of technology is not sufficient to ensure learning (Neto, Huang & Melli, 2015). Thus, the use of adobe connect for synchronous webinar's is designed to ensure we engage the student in a way that replicates traditional face-to-face delivery; guided discussion, mini-lecture, quizzes, and so forth.

This approach mitigates another significant factor, or as described earlier; competing demand in ensuring transfer of learning takes place and that is the concept of cognitive load. Cognitive load is especially critical for those learners who have been away from education for a significant period of time; which tends to be the CAD demographic. These adult learners not only have to grapple with the rigor associated with college learning they must re-learn how to learn. Cognitive load theory is a multi-dimensional and complex theoretical construct and as such a deep dive into is practical application goes well beyond this paper. However, a simplified explanation is appropriate for our purposes in that for learning to occur, the learner's total cognitive load can never exceed his or her working memory capacity (Neto, Huang, & Melli, 2015). One instructional design approach that successfully reduces extraneous cognitive load is the use of multimedia components that lower cognitive load by using students' multiple modalities to process information (Kahlil, et al. 2005).

A hybrid approach addresses these modalities, or learning styles, through synchronous webinars. The audio, visual, and kinesthetic learner all garner learning during the synchronous session as the delivery includes mini lecture, guided discussion, poll questions, quizzes, and time for reflection. Moreover, each session is recorded which offers the audio learner another opportunity to hear, thus learn from the session, this also reduces the need to memorize content thus further reducing cognitive load.

Training literature and previous studies on transfer of training provide evidence to support the claim that training works when it is theoretically driven, focused on required competencies, designed to provide trainees with realistic opportunities to practice and to receive feedback (Salas & Cannon-Bowers, 2001). It is our belief that the same is true for learners especially those learners associated with The CAD program.

Competency based education

Competency based education (CBE) is often lauded as the latest disruption that seeks to respond to the growing sense of national urgency to boost education attainment. The target

audience generally includes those adult learners with some college but no degree already participating in the workforce (Book, 2014). Yet, in reality CBE is not new, it has been around the United States since the 1960s, following Australia's earlier competency based education models. The 1960s is when CBE moved beyond basic vocational training to educational based training. One key aspect of CBE is the focus on student outcomes rather than the educational process. Much like the Civilian Associate's Degree Program, interdisciplinary institutional competencies are developed with a combination of education and experience.

Air Force Manual (AFMAN 36-2647), titled "Institutional Competency Development and Management," defines competencies as observable, measurable patterns of knowledge, skills, abilities, behaviors, and other characteristics needed to perform institutional or occupational functions successfully (Corsi, 2014). Much like the Air Force core values of integrity first, service before self, and excellence in all we do, competencies are enduring, and encompass interdisciplinary leadership attributes believed as critical for mission success. The purposes of Air Force institutional competencies are to enhance leadership performance, set leadership behavioral standards, and translate values into behavioral norms (Corsi, 2014). These competencies are enhanced when students bring their personal and professional experiences into the CAD program and combine them with interdisciplinary leadership theory.

While CBE presents a viable alternative to traditional educational forms it is not a panacea for all the perceived ills of a traditional delivery approach. First due to multiple variables, competencies are not always easy to measure (Pijl-Zieber, et al., 2014). Nor is there a conceptual agreement on what we now mean by the term "competency" across higher education sectors (Book, 2014). Therefore, CAD faculty have determined it is the best approach for our particular audience; the Civilian Airman adult learner. Specifically, the model chosen is Course-based with credit equivalency. The competencies identified as critical to the success of the Civilian Airman are embedded in the curriculum. This approach is similar to those approaches identified by Johnstone and Soares (2014) the exception being we do not offer self-paced or accelerated options.

As noted above, evaluating the attainment of a particular competency can be challenging, especially with regard to non-linear competencies such as critical thinking or cultural awareness. An early definition of competency was offered by Boyatzis (1982) as the ability to demonstrate a system of sequence of behavior that is functionally related to attaining a performance goal. We feel this definition has been usurped or replaced by workplace coaching in that coaching fulfills this level of competency attainment. We are seeking a more specific and unique competency that goes beyond simple learning outcomes. These competencies are designed to address Air Force specific leadership and followership competencies. Specifically, the CAD Program could provide data to support whether or not learning outcomes and competencies can lead to transformation from an individual contributor to a professional; equal to their commissioned officer counterparts.

Klein-Collins (2012) offer three compelling points as they related to the key differences between learning outcomes and competencies:

1. Competencies are at a higher categorical level requiring students to process learning in a way that enables them to apply it in a variety of situations.
2. Competencies are assessed at different levels that a student might be required to demonstrate depending on the educational level of the student.
3. Competencies are considered more objectively measurable.

In the CAD program demonstrating the ability to deal with conflict, or adjust from leader to follower, or simple adapt to a different organizational culture all fall into the category of "applying a competency in a variety of situations." While the CAD program is at the Associate Degree level there are still varying degrees of competency assessment even if only

the level of expectation of a year one versus year two student. As far as objectivity is concerned the assessment of any learning outcome is certainly evaluated during the program however, the organization itself, through first line and other leaders, also assess the attainment of competency attainment.

As Book (2014) noted any institutional "value-add" is in the assessment of "mastery." What does the learner know and can they apply that knowledge, or demonstrate it, at the level of proficiency that is meaningful in the workplace (pg. 6)? Some of this evaluation comes from the student themselves which can certainly be measured; however, a significant part of that evaluation may come months or even years later, by unknown evaluators.

Lessons learned and the way ahead: An interdisciplinary perspective

Learning outcomes associated with the initial course in the Beta Test (Foundations of Leadership) were:

1. Know basic concepts about relevant leadership theories and leadership attributes.
2. Know strengths and weakness of relevant leadership theories.
3. Know which leadership theory/theories student's leadership style most closely resembles.
4. Know how diversity and ethical leadership affect the organization.

Students averaged an 82% on the week one Foundations of Leadership quiz. Weekly quizzes were designed to evaluate knowledge of student objectives and learning outcomes. Week two showed a one percent increase. Themes associated with student feedback involved concern with taking a multiple-choice quiz, test anxiety, and frustration with learning how to become an effective professional Civilian Airman and student while balancing other priorities throughout the none week course. Faculty began to notice how students knew the leadership theories covered in class, and students were even able to demonstrate application of course concepts. However, the majority of the students were uncomfortable in the online learning environment as they continued to contact their instructor during week one office hours. Yet, students showcased their learning ability as the average score through the first three course weeks, was 86% on practice quizzes during synchronous webinars, while their formal quiz average was a slightly lower cumulative total of 84%.

The primary disconnect for students and the online learning environment was a robust student orientation; it simply was not available at the outset of the beta test. Thus, the Course Director had to spend the first 90-minute synchronous Adobe Connect webinar orienting students to Adobe Connect, Blackboard, and the online learning environment. With only one of ten students with prior online learning experience, these students experienced a steep learning curve. While week one introduced two prominent yet older theories of leadership in the Great Man and Trait Theories of Leadership, student feedback revealed students were still busy learning how to access the learning management system and how to formulate a discussion board post. Students noted how they were aware of the leadership theories, but needed guidance in how to succeed as an adult online learner.

Institutional competencies of the students, as shown in Table 1, covered many of the leadership theories discussed in the course. The students had already experienced various leadership models, many times without realizing which model they witnessed in their professional capacity. For example, all ten students responded to a week four question about situational leadership theory by noting how they have experienced situational leadership at their work center. This transfer of learning was demonstrated by students with the same institutional competencies throughout a set of interdisciplinary Civilian Airman Students working in communications, administrative, civil engineering, and fire and rescue professions.

Students were administered a short answer/essay format final exam during the last week of the course. Originally the students were to complete a cumulative, multiple choice exam.

Changing the exam format allowed faculty members to focus the degree to which students were achieving course learning outcomes. The student average grade was a 99% using the standardized CAD essay grading rubric. After an 82% week one quiz average, the students did well with demonstrating how their previous leadership experiences transferred to the CAD program.

When asked to note what contributed to their ability to improve throughout the course, students gave the following examples:

1. Adapting to online learning
2. Transferring what I already knew to the course
3. Learning how to be a student again
4. Getting confident and reducing test anxiety
5. The essay format helped me show what I knew

Kirkpatrick (1977) offers that the seemingly obvious, but overlooked, reason for evaluation is to determine the effectiveness of the program and ways in which it can be improved. CAD faculty began the evaluation process very early in the BETA test to ensure we lessons learned were captured, and could make substantive changes to subsequent offerings.

The final, summative evaluation tool captured transfer of learning as well as mastery of student learning outcomes. Aligning student learning outcomes with Civilian Airman institutional competencies allowed faculty to focus on the personal, people/team, and organizational competencies set forth by Air Force leadership. Measurement of the KSAs gained from the CAD and other training and education programs will be monitored and tracked via means such as follow-up surveys sent to attendee supervisors as well as student feedback. This approach supports the education, training, and experience approach associated with the Air Force continuum of learning.

Conclusion

In this paper, discussions included training and education with respect to the Civilian Airman. As of the writing of this paper the CAD is in term three of the beta test. Two significant lessons are evident: student orientation is a must for any program; and adult learners often know more about certain topics than they realize. Regarding student orientations: any educational program must be designed to address the online learning environment by addressing and removing obstacles to learning. The program must ensure there is time during the orientation period for student to learn how to navigate the learning management system (LMS), how to contact a support desk, and the nuances of how their learning might be measured by course rubrics, tests, quizzes, attendance, and participation in webinars. Second, we discovered that our adult learners did not realize their own expertise. Thus in addition to providing background on relevant theory we also began to highlight their expertise through the guided discussion method.

Our interdisciplinary training is tailored to developing leadership competencies associated with Civilian Airman leadership. It is clear people and information combined into continuously formulated and reusable knowledge have replaced materiel and combat power as the primary source of organizational success in the military and government sector. Therefore, the ability to create, foster, enhance and otherwise use knowledge is the critical skill of our time and thus understanding how we transfer said knowledge and learning is paramount. Therefore, we argue that transfer of learning and competency based education are both interdisciplinary in nature, just as the interdisciplinary Civilian Airman. Dating back to Gagne (1962), interdisciplinary military training and education benefit when incorporated with CBE and transfer of learning theories. Civilian Airman competencies are already clearly defined. Education and training programs for the interdisciplinary Civilian Airman must focus

on measurement of defined student knowledge, skills, and abilities aligned with student learning outcomes.

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References

Blume, B. D., Ford, J. K., Baldwin, T. T., & Huang, J. L. (2010). Transfer of training: A meta-analytic review. *Journal of Management*, *36*, 1065-1105.

Book, P. A. (2014). All Hands on Deck: Ten Lessons from Early Adopters of Competency-Based Education. Western Interstate Commission for Higher Education.

Boyatzis, R. E. (1982). The competent manager: A model for effective performance. John Wiley & Sons.

Corsi, R. (2014). *Air Force Manual 36-2647, Institutional Competency Development and Management*. United States Department of the Air Force.

Day, S. B., & Goldstone, R. L. (2012). The import of knowledge export: Connecting findings and theories of transfer of learning. *Educational Psychologist*, *47*, 153-176.

De Rijdt, C., Stes, A., van der Vleuten, C., & Dochy, F. (2013). Influencing variables and moderators of transfer of learning to the workplace within the area of staff development in higher education: Research review. *Educational Research Review*, *8*, 48-74.

Dubois, D. D. (1993). Competency-based performance improvement: A strategy for organizational change. Amherst, MA: HRD Press.

Fadok, D. (2006). AFDD II, Leadership, Annex 1-1, *Force Development*.

Ford, K., Vignare, K., Mulherrin, B., Davis, C., & Cini, M. (2014). Competency-Based Education. *JACC: Cardiovascular Interventions*.

Fursh, K. A. (2014). Faculty Perspectives: The Diffusion of Competency-Based Education. *Adult Education Research Conference*, 651-652.

Gagne, R. M. (1962). Military training and principles of learning. *American psychologist*, *17*, 83.

Johnstone, S. M., & Soares, L. (2014). Principles for developing competency-based education programs. Change: The Magazine of Higher Learning, 46(2), 12-19.

Khalil, M. K., Paas, F., Johnson, T. E., & Payer, A. F. (2005). Interactive and dynamic visualizations in teaching and learning of anatomy: A cognitive load perspective. The Anatomical Record, 286(1), 8-14.

Kirkpatrick, D. L. (1977). Evaluating training programs: Evidence vs. proof. Training Dev J.

Klein-Collins, R. (2012). Competency-Based Degree Programs in the US: Postsecondary Credentials for Measurable Student Learning and Performance. Council for Adult and Experiential Learning.

Krause, J., Dias, L. P., & Schedler, C. (2015). Competency-based education: A framework for measuring quality courses. *Online Journal of Distance Learning Administration*, *18*, 1-9.

Mestre, J. P. (2005). Transfer of learning from a modern multidisciplinary perspective. *IAP*. Greenwich Connecticut.

Neto, Huang, & Melli (2015). Online learning: audio or text? *Association for Educational Communications and Technology,* 63, 555-573. doi: 10.1007/s11423-015-9392-7.

Perkins, D. N., & Salomon, G. (1992). Transfer of learning. *International encyclopedia of education*, *2*, 6452-6457.

Pijl-Zieber, E. M., Barton, S., Konkin, J., Awosoga, O., & Caine, V. (2014). Competence and competency-based nursing education: finding our way through the issues.

Salas, E., & Cannon-Bowers, J. A. (2001). The science of training: A decade of progress. *Annual review of psychology*, 52(1), 471-499.

U.S. Department of Education. (2017). Competency-Based Learning or personalized learning. Retrieved from http://www.ed.gov/oii-news/competency-based-learning-or-personalized-learning.

Van Doom, J. R. & Van Doom, J. D. (2014). The quest for knowledge transfer efficacy: blended teaching, online and in-class, with consideration of learning typologies for non-traditional and traditional students. *Frontiers in Psychology,* 324, 1-14. doi: 10.3389/fpsyg.2014.00324.