Student Motivation and Assessment of Applied Skills in an Equine Studies Program

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Student motivation is a universal teaching challenge. A holistic approach to assessment was developed for cognitive and psychomotor tasks in equine studies. First-year students (n=55) were either randomly provided (PR) or not provided (NP) a rubric 3 weeks prior to skills testing. The PR students earned lower total scores ($p < 0.05$) than NP students (12.8 and 17.1 ± 5.3, respectively). In individual categories, PR and NP students had similar ($p > 0.05$) pass superior scores. Third-year students (n = 7) self-rated task performance using an affective rubric and reflection exercises. Although the original goal was to promote standardization of hands-on skills, these data indicate that students are more goal-oriented than process-oriented; furthermore, use of affective rubrics for self-assessment promoted a learner-centered approach to motivation.

Midway College held a virtual monopoly on equine programs in Kentucky when its program was started over 20 years ago. As student and industry demand for equine academics has increased, approximately 185 institutions in the United States have launched programs with diverse offerings as degrees, concentrations, or coursework focusing on the horse industry (National Association of Equine Affiliated Academ-

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ics, 2009). This demand has followed the growth of the equine industry in the United States. The American Horse Council (2005) reported in a national study targeted at horse owners that there are approximately 9.2 million horses, which is higher (3.6 million) than the untargeted study by the United States Department of Agriculture, National Agriculture Statistics Service (USDA, 2002). In addition to horse numbers, the American Horse Council concluded that the equine industry has a dramatic impact on the United States economy. In terms of the Gross Domestic Product (GDP), this industry contributes a total of $39 billion, which is greater than the motion picture industry, railroad transportation, furniture manufacturing and tobacco product manufacturing services (The American Horse Council, 2005). In Kentucky alone, the equine industry has a reported economic impact of more than one billion dollars (Center for Business and Economic Research, 2004). For the first time, the 2010 World Equestrian Games will be hosted in the United States in Lexington, Kentucky. This event will create jobs and internship opportunities in several aspects of the industry. Recently, as a greater percentage of students from urbanized communities have enrolled in applied animal science programs (Britt et al., 2008; Hoover & Marshall, 1998; Reiling et al., 2003), development of standardized curriculum and assessment to meet the needs of students with either extensive or non-existent animal handling skills is necessitated.

Although educational opportunities in the equine industry have increased over the last 20 years, there is no universally adopted skill set required for graduates of existing equine programs. Potential career paths require mastery of both hands-on skills and business knowledge (Conners & Brady, 2009; Houge-Davies, 2004; Kretler, 1995). For instance, an equine professional having direct contact with horses should be able to assess the health and welfare of the horse, sense and interpret physical changes with their hands and visual inspections, interpret behavior, perform training of the horse for a specific purpose, assess and manage feeding and nutritional needs, communicate with clients and medical professionals, and perform accounting tasks plus many more business management activities (Conners & Brady, 2009; Houge-Davies,

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2004; Landers, 2002). Clearly, the wide array of skills necessitated for such careers confounds development of academic standards for teaching equine studies.

The Equine Studies Program at Midway College consists of two Baccalaureate degrees and one Associate degree. The Baccalaureate degrees are Bachelor of Science in Equine Studies with Concentration in Equine Health and Rehabilitation and Bachelor of Arts in Equine Studies with Concentration in Applied Equine Management. All degree programs require mastery of hands-on skills in addition to specific cognitive and assessment tasks. At entry, the majority of students display some level of equine experience, but there is neither a common level of proficiency nor a similar training background among students. To address these differences, a four course sequence of Practicum classes is required of all equine studies students at Midway College.

Hands-on skill learning is often evaluated only by achievement of the assigned task after repetitive practices. Similar to rote memorization of facts, this repetitive performance can be perceived as boring or insignificant, thereby decreasing intrinsic motivation to learn a new skill (Char, 2009). Further, pre-existing knowledge of equine handling does not correlate to re-learning skills in a safe method (Meek et al., 2005). When students do not perform a skill following the in-house method, it is more difficult to reduce potential safety hazards. Besides safety, the learning process is often disrupted because inexperienced students are initially not as comfortable handling horses and look for guidance from experienced students (Meek et al., 2005). Applied learning with horses is unlike chemistry experiments where mixing of specific chemicals provides a predictable reaction (or no reaction). Horses are unpredictable animals that react to the environment to satisfy basic survival needs. Therefore, this unpredictability poses a problem in standardizing the teaching and learning process and can present interference as less confident students express lower motivation in situations that are perceived to be unsafe. In consideration of these challenges, a teaching tool was investigated as a means to link the process of critical thinking to action.

Generally, rubrics are part of a teacher's daily routine in which rubrics are created and utilized to accurately achieve a grading standard. Rubrics are a form of authenticity set to guide both students and teachers in assignment evaluation and are often subjective in nature. They are commonly seen in writing courses and used for assessment testing in primary schools (Andrade, 2000; Andrade & Du, 2005; Char, 2009; Loveland, 2005). According to Loveland (2005), rubrics are vital because of the need for clear descriptions of project expectations, and upon review, rubrics provide a clearly delineated path for students to improve their work. Loveland also stated the benefits of a well-planned and thorough rubric for teachers. Development of an original rubric requires

instructors to take a retrospective view of a task for which they are writing the rubric (Leonhardt, 2005). Other authors echoed the need for rubrics to be clear and concise (Andrade, 2005; Andrade & Du, 2005; Issaacson & Stacy, 2009). If students do not have prior knowledge of the categories defined on a rubric, then rubric usage can create frustration, be dismissed, or be used only in a partial format (Andrade & Du, 2005). To increase effective use of rubrics, students should practice using the assessment tool (Andrade, 2000; Hafner & Hafner, 2003; Tan & Towndrow, 2009). Often students will use a rubric as a study guide or outline for developing written projects (Andrade & Du, 2005), medical task performance (Brown et al., 2006), and formative development of music skills (Leonhardt, 2005) indicating that such an assessment tool is useful in the teaching process.

For this research project, a rubric was chosen as a teaching and assessment tool because each hands-on task, or psychomotor skill, could be subdivided into parts and performance measures could be evaluated; thereby the process of teaching and learning the task would be standardized. In theory, providing the assessment tool prior to a task should improve student scores; therefore, the objective of Phase I was to determine if prior knowledge of the assessment tool would increase overall scores as well as scores on individual steps as compared to groups that did not receive the rubric. Based on results from Phase I, a second objective was developed to determine if student motivation to perform hands-on skills is enhanced when provided with an affective rubric for self-assessment.

METHOD

PHASE I

A faculty-derived rubric was developed for a showmanship pattern, which is a skill commonly found in showing horses for competition and sale. This task is universal in that all breeds and disciplines in the industry use showmanship for marketing their horses and/or service businesses. Although some variations in horse presentation and handler dress exist, efforts were made to prepare a rubric which would be applicable across breeds and disciplines. The showmanship skill involves the student making preparations with a horse several weeks prior to completing the task; therefore, students would require adequate time to prepare for assessment. Steps to create an original rubric were modified using a previously described method (Leonhardt, 2005). The rubric was subsequently revised, based on student and faculty feedback following an initial review as previously suggested (Murthy & Etkina, 2005). First-year students (n = 55) were either randomly provided (PR) or not provided (NP) the rubric three weeks prior to skills testing. In this instance, the

task was desegregated into 11 categories with a pass superior, pass, or fail scoring category worth 2, 1, and 0 points, respectively (Table 1). Once the students were assessed using the rubric, data were analyzed by the Proc GLM procedure of SAS with judge and whether or not the rubric was provided as test variables. Significances were determined at $p < 0.05$ with tendencies noted between $p = 0.05$ and $p = 0.10$.

PHASE II—PILOT STUDY

As the equine industry incorporates non-invasive performance enhancing techniques such as hydrotherapy, massage, and water treadmill exercise, there is increased demand for individuals with both knowledge and the ability to synthesize and evaluate healing and physical condition visually and through tactile sensations. Unlike human rehabilitation, horses do not provide reliable feedback on how the student is applying touch; furthermore, educating students to have 'thinking hands' presents a challenge. A holistic approach to teaching sensory perception was implemented in a series of manual integration courses. The activities were designed in a sequential format to promote movement through all six cognitive levels (Bloom, 1956), and using methods from an experiential learning model previously applied in a large-animal practical course (Reiling et al., 2003). Tools for teaching touch in other fields, such as nursing, were used in conjunction with lecture materials. Further, laboratories were developed using heating packs and false hair samples to simulate heat and cold perception. During a touch laboratory students were expected to apply self-massage techniques on the arms, hands, shoulders, and head to explore feeling. Students were also assigned to apply massage techniques on a project horse for the course of two semesters. Students were required to self-assess affective characteristics of "comfort" and "feeling" (Table 2) immediately following completion of aforementioned exercises. Students were then asked to reflect on the experience in a written format and were led in an informal group discussion regarding the affective rubric to determine usefulness and motivation to learn the novel tasks.

RESULTS

PHASE I

Sample tasks and assessment standards included a measurable outcome for many of the showmanship steps (Table 1). For example, the task of pivoting a horse 90 degrees is measurable by the amount of pivot. However, some tasks were considered more subjective by the raters than those with a clearly quantifiable value. For each task category, students

Table 1: Rubric for the showmanship task

Task	Pass Superior	Pass	Fail
Stand horse at cone 1; ready and waiting to be judged	Horse is standing quietly in the proper stance for the breed/type shown. Horse's shoulder is at the cone. Handler is showing in the appropriate quarter, exhibiting a precise show stance.	Horse is standing quietly in the proper stance for the breed/type shown. Horse's shoulder is near the cone. Handler is showing in the appropriate quarter, exhibiting a loose but technically correct show stance.	Horse is not standing in the proper stance for the breed/type shown. Horse's shoulder is uneven with the cone. Handler is not showing in the appropriate quarter. Handler is not exhibiting a proper show stance.
Wait for the judge to nod in acknowledgment of the handler	Handler waits for the judge to nod. After the nod, the handler moves promptly into the pattern.	Handler waits for the judge to nod. There is a slight hesitation before the handler moves into the pattern	Handler does not wait for the judge to nod. There is an obvious hesitation before the handler moves into the pattern.
Walk from first to second cone	Line of travel is straight. Horse moves off without hesitation with a brisk forward motion. Handler maintains a proper distance away from the horse and even with the horse's ear.	Line of travel is fairly straight. Horse moves off with slight hesitation with forward motion. Handler maintains a proper distance away from the horse and even with the horse's ear.	Line of travel is not straight. Horse shows obvious hesitation in starting forward. Horse may exhibit backward motion. Forward motion is sluggish and lacks energy. Handler does not maintain proper positioning in relation to the horse.
Halt; Pivot 90 degrees to the right at cone 2	Horse halts squarely with shoulder even at cone 2. No backward movement is observed. Horse moves smoothly into the pivot, keeping forward motion with the front feet and left hind foot, and planting the right hind foot. The haunch turn is exactly 90 degrees.	Horse halts squarely with shoulder even to cone 2. No backward movement is observed. Horse shows slight hesitation moving into the pivot, keeping forward motion with the front feet, and planting one of the hind feet. The haunch turn is exactly 90 degrees.	Horse does not halt squarely. Horse's shoulder is not even with cone 2. Backward movement is observed. Horse shows obvious hesitation moving into the pivot and shows backwards motion with the front feet. The haunch turn is not equal to 90 degrees.
Trot/jog from cone 2 to cone 3	Line of travel is straight to the judge. Horse moves off without hesitation with a brisk forward motion. Handler maintains a proper distance away from the horse even with the horse's ear.	Line of travel is fairly straight to the judge. Horse moves off with slight hesitation with forward motion. Handler maintains a proper distance away from the horse even with the horse's ear.	Line of travel is not straight to the judge. Horse shows obvious hesitation in starting forward. Horse may exhibit backward motion. Forward motion is sluggish and lacks energy. Handler does not maintain proper positioning in relation to the horse.

Handler and horse halt at cone 3; handler stands horse	Horse halts squarely with shoulder even at cone 3. No backward movement is observed. Horse is standing in the proper breed stance within 6 seconds of the halt. Handler is showing in the appropriate quarter, exhibiting a precise show stance.	Horse halts squarely with shoulder even at cone 3. No backward movement is observed. Horse is standing in the proper breed stance within 15 seconds of the halt. Handler is showing in the appropriate quarter, exhibiting a loose but technically correct show stance.	Horse does not halt squarely. Horse's shoulder is not even with cone 3. Backward movement is observed. Horse is not standing in the proper breed stance. Handler is not showing in the appropriate quarter. Handler is not exhibiting a proper show stance.
Handler presents horse in quarters	Handler consistently stands in the appropriate quarter in relation to the judge. Movement in front of the horse is precise and quick, using a minimum of steps.	Handler consistently stands in the appropriate quarter in relation to the judge. Movement in front of the horse is smooth, but lacks preciseness and energy.	Handler does not stand in the appropriate quarter in relation to the judge. Movement in front of the horse lack smoothness and looks stilted and awkward.
Handler turns horse 270 degrees to the right; walks to line up area	Horse moves smoothly into the pivot, keeping forward motion with the front feet and left hind foot, and planting the right hind foot. The haunch turn is exactly 270 degrees. Horse departs smoothly into a forward, energetic walk.	Horse shows slight hesitation moving into the pivot, keeping forward motion with the front feet, and planting one of the hind feet. The haunch turn is exactly 270 degrees. Horse departs fairly smoothly into a forward walk.	Horse shows obvious hesitation moving into the pivot and shows backwards motion with the front feet. The haunch turn is not equal to 270 degrees. Handler turns horse the wrong direction. Horse shows hesitation at the walk and does not exhibit an energetic gait.
Handler lines up and remains showing horse	Horse is standing quietly in the proper stance for the breed/type shown. Handler is showing in the appropriate quarter, exhibiting a precise show stance.	Horse is standing quietly in the proper stance for the breed/type shown. Handler is showing in the appropriate quarter, exhibiting a loose but technically correct show stance.	Horse is not standing in the proper stance for the breed/type shown. Handler is not showing in the appropriate quarter. Handler is not exhibiting a proper show stance.
Overall - Handler's attire	Handler is dressed in the appropriate attire for the breed/type being shown. Attire is of the highest show caliber.	Handler is dressed in the appropriate attire for the breed/type being shown. Attire is functional, clean and fitted.	Handler is not dressed in the appropriate attire for the breed/type being shown. Attire is dirty, has holes in it, and does not fit well.
Overall - Horse's appearance	Horse is very clean and passes the white glove test. All markings are gleaming white. Horse is appropriately clipped. Mane and tail are braided/banded appropriately. All equipment is clean.	Horse is clean, with some dust showing on the white glove test. All markings are clean. Horse is appropriately clipped. Mane and tail are clean, brushed and free from tangles. All equipment is clean.	Horse has obvious dirt showing and does not pass the white glove test. Markings have stains or visible dirt. Horse is not clipped. Mane and tail are tangled and dirty. Equipment clearly has not been cleaned.
Final Score:	Number of “Pass Superior” x 2 =	Number of “Pass” x 1 =	Number “Fail” x 0 =

earned a score (Fail = 0, Pass = 1, Pass Superior = 2) that was compiled to equate to a total score. An overall score of 11 was considered passing for the assessment. The results demonstrated that the PR students earned a lower ($p < 0.05$) total score of 12.8 than the NP students earned of 17.1 (Table 3). In consideration of individual score categories (Table 4), the PR and NP students had similar ($p > 0.05$) pass superior scores. Interestingly, PR students demonstrated higher ($p < 0.05$) pass scores than the NP students. Conversely, higher ($p < 0.05$) fail scores (1.4) were noted in NP students as compared to PR students (0.1).

Table 2: Assessment rubric for comfort and feeling

Comfort	I was/am 20% comfortable with performing this exercise.	I was/am 40% comfortable with performing this exercise.	I was/am 70% comfortable with performing this exercise.	I was/am 100% comfortable with performing this exercise.
Personal Feeling	I am exhausted; I feel drained; I feel sore in my hands and shoulders; I am 100% dissatisfied with the session	I am neutral; I feel neither drained nor energized; I feel sore in my hands and shoulders; I am only 25 % satisfied with the session	I am neutral; I feel neither drained nor energized; I feel good overall; I feel sore in my hands and shoulders; I am only 70% satisfied with the session	I am energized or at least feel the same as I started the session; I feel grounded; I feel only minor soreness in my hands and shoulders; I am 100% satisfied with the session.

Table 3: Total scores for students (n = 55) either provided the rubric (PR) or not provided the rubric (NP) prior to the skill assessment.

Student Group	Total Score[1]
PR	12.8[b]
NP	17.1[a]
	(5.3)

[1]Total scores for all rubric categories (mean square error for total scores)
[ab] Values with unlike superscripts within a column are significantly different at $p < 0.05$

Table 4: Individual score categories for students (n = 55) either provided the rubric (PR) or not provided the rubric (NP) prior to the skill assessment.

	Score Category[1]		
Student Group	Pass Superior	Pass	Fail
PR	2.3[a]	6.1[a]	0.1[b]
NP	3.3[a]	2.0[b]	1.4[a]
	(3.5)	(2.9)	(0.2)

[1]Individual scores for all rubric categories (mean square error for total scores)
[ab] Values with unlike superscripts within a column are significantly different at $p < 0.05$

PHASE II

A standardized rubric (Table 2) for assessing affective values in performing tactile skills was rated as 100% (7 of 7 responses) useful by students. When asked to analyze individual progress over the semester, students indicated that their comfort and personal feeling scores decreased under two conditions: when a task was novel or when external stressors (exams, personal situations, lack of rest) impacted their participation. Faculty observations of student involvement in course activities noted that as students realized that their peers were also feeling uncomfortable or tired, the class was more likely to participate in discussions and expressed more eagerness to apply the techniques in a practicum setting.

DISCUSSION

Results from the initial study agree with the concepts identified in both the arts and music fields (Mason & Steedly, 2006; Meier et al., 2006; Leonhardt, 2005). There were notable discrepancies in the use of individual steps of the rubric, making assessment complicated. However, based on focus group discussions with raters, the faculty-derived rubric was desegregated into appropriate categories and considered useful, although measurement of 'usefulness' was not determined in Phase I.From these discussions, the importance of providing a method for quantifying performance under each task category was noted.

Although not clearly addressed, other works utilizing rubrics for psychomotor skills often include some form of quantitative measure (Brown et al., 2006; Seybert & Barton, 2007), although such values were not consistently included in rubrics used for writing skills (Andrade, 2005; Loveland, 2005). By nature, the rubric as an assessment tool should make grading less redundant by limiting the number of times a professor writes the same comment and provides a means for student understanding of grading standards (Brookhart, 2003). Descriptors such as "few," "wide variety," "slowly," "many," are open to interpretation resulting in differences between rater and student interpretation. The differences between the need for quantitative measure in rubrics for cognitive skills as compared to psychomotor skills may be related more to field of study. For instance, in nursing, a "likely harmful" score in a rubric dealing with application of aseptic technique for preparation of aseptic products may result in injury, illness or death depending on the ultimate use of the product (Brown et al., 2006). In consideration of an increased risk to humans or animals, rubric categories should be quantifiable by time, proportions, or other forms of measure to limit rater interpretation and subjectivity. As a means to address clarity in rubric use, proportions were implemented into the rubric developed for Phase II. The use of

proportions gave raters the ability to assess the value of their affective response on a commonly known scale. These alterations aided in creating clarity of the assessment tool, which is in agreement with previous work (Andrade & Du, 2005; Meier et al., 2006).

Murthy and Etkina (2005) designed a rubric to assess their students' abilities in devising solutions to a laboratory problem and conveying their solution in a written format reports in a large enrollment introductory laboratory course. The average final exam score for the sample group was 78.3 as compared to the class average of 75 out of 100 possible points. The authors indicated a need for development and revision of the rubric prior to use and suggested that student performance improved after receiving the rubric (Murthy & Etkina, 2005). These data contradict the findings in Phase I. Apparently students in Phase I PR group were motivated to accomplish a "passing" score, but not motivated enough to achieve a "pass superior" score. Further, there were more students to both "fail" and "pass superior" in the NP groups reflecting the highest and lowest motivation for achieving the overall skill.

Compilation of student reflections into several themes demonstrated in both phases of this study that the overall experience of using a rubric was positive and alleviated much of the confusion often associated with the "how-to's" of hands-on skills. The students in Phase II reflected that the rubrics should be created for all equine courses to help alleviate subjectivity in assessment. This theme supports the faculty observation that perception of fairness in assessment and clearness of expectations enhances motivation and willingness to learn these skills and agrees with similar findings in the writing field (Andrade & Du, 2005) and for oral presentations (Hafner & Hafner, 2003). Despite this positive theme, there were student-derived recommendations for improvement of the assessment tools. The first recommendation theme was that some steps in the skills rubric should be weighted as critical points, and the skill steps should be even more detailed to make the teaching and assessment tool more effective. Another recommendation was that all students could have benefited from having the tool in advance for practicing hands-on skills; however, based on student scores in this trial, this perception does not result in achievement of the highest possible score. This discrepancy between attitude towards the rubric use and perception of performance level was also observed in the application of music skills (Char, 2009; Schmidt, 2005). Assessment of a student's motivation to practice a task as compared to performance of that task may be a better means to differentiate intrinsic from extrinsic motivators (Schmidt, 2005).

USE OF RUBRICS AND STUDENT DEVELOPMENT IN APPLIED LEARNING

Bloom's Taxonomy of Learning dictates that learning occurs in three different manners: cognitive (knowledge), affective (attitude), and psychomotor (skills) (Bloom, 1956). In an equine studies program, a base level of cognitive learning is necessary so that the student understands theory and background common to the industry. Also necessary is a high level of psychomotor learning in an effort to achieve practical applications. This presents a challenge to the instructor who must balance the levels and application of cognitive and psychomotor learning within a given lesson. In addition to complicating the teaching process, the combination of cognitive and psychomotor elements creates a challenge in assessing student performance. Students demonstrating a particular task (evidence of the skill) are not usually expected to also demonstrate cognitive learning (either in verbal or written format). Conversely, students demonstrating cognitive learning generally are not required to demonstrate psychomotor learning with a horse in the classroom environment.

A framework describing the different stages of psychomotor learning has been previously described (Simpson, 1972). Within this framework a student progresses through the steps of perception, set, guided response, mechanism, complex overt response, adaptation, and origination. These divisions progress from basic learning of a skill (perception and set) to advanced mastery of the skill resulting in spontaneous improvement as a response to specific problems (origination). Within an equine studies program, professors encourage students to progress from guided response to at least the mechanism step. As students progress to the mechanism category, they have moved into the intermediate stages of learning. During this type of psychomotor learning, response and actions become habitual, and the student displays a moderate amount of confidence when displaying skills (Simpson, 1972). Students in equine programs are traditionally assessed by demonstration and subsequent comparison of the psychomotor skill to a standard, which is defined in-house or by a respected equine professional. However, achievement of the skill is not always the entire purpose of teaching the task, and some methods of performing individual skills put both the horse and student in potentially dangerous situations. These skills are often not intuitive or inherently logical; therefore, safety issues and program inconsistencies dictate the need for these skills and the learning experience to be standardized. In the equine industry, judging standards associated with showing of various breeds and disciplines exist; however, clear holistic standards that reach across all breeds or disciplines do not. In other fields, there are standardized tests for outcome-based cognitive learning.

The data presented in this trial indicate a combination of an assessment rubric developed for a specific psychomotor task and an affective rubric for self-assessment are viable options for teaching and assessing applied skills in the equine studies field.

Previous experiences with handling horses affect student comfort in performing applied tasks (Meek et al., 2005). Through further development of rubrics for other equine studies skills, as indicated in this study, the hands-on experience could be standardized. Furthermore, well-constructed rubrics may also assist in developing intrinsic motivation for learning these skills when students demonstrate pre-existing horse experiences. Inexperienced students could benefit from these tools by having a clearly delineated step-wise process. Both Andrade and Du (2005) and Brookhart (2003) reported that formative assessment of "good writing" results in students transferring their rubric-based conceptions of quality work into other courses and to other students. As academic programs in the equine studies field grow, further development of teaching and assessment tools which standardize hands-on skill learning and the critical thinking process would promote cohesiveness of equine studies programs, enhance student motivation, and provide a means for documenting student progress. Other fields of study that do not have the benefit of multiple leading generations might also benefit from development of similar tools to promote standardization, motivation, and documentation of student learning.

Experiential learning and more specifically active learning is an instructional method which engages students in the learning process and requires that students think about what they are doing instead of solely memorizing facts (Lohuis et al., 1999; Prince, 2004; Tan & Towndrow, 2009). In this study, rubrics were used as applications of universal intellectual standards (Paul & Elder, 2001) for teaching and assessment of hands-on skills. Based on focus group discussions, the student learning experience was positive, and the tools served as effective means for linking critical thought to action. Students were encouraged not only to perform a skill, but to evaluate how to perform that skill. This observation has also been recently documented in students learning music skills (Char, 2009). By using rubrics in this method, the process of critical thinking was introduced in a non-threatening manner. Students clearly struggled with converting from cognitive to affective and self-reflective activities as indicated through observable expressions of frustration and dissatisfaction in Phase II. These observations support the data from Phase I of students being more goal-oriented than process-oriented. The results from Phase I clearly delineated that first-year students may not work to the highest score level when provided with the assessment tool, which is in agreement with results in the music (Char, 2009) and writing (Andrade & Du, 2005) fields. Motivation in third- and fourth-year stu-

dents is often perceived as less about comfort and more about focusing on graduation or employment goals. Clayton (2009) stressed the development of learning objectives for "critical reflection [that] generates, deepens and documents learning" (p. 7). Similarly, in nursing clinical education, the use of rubrics aided not only in instructor feedback, but also student application of critical thinking and reflection (Isaacson & Stacy, 2009). In making the shift from Phase I to Phase II, course activities were aligned with moving students through a clearly delineated, step-wise learning experience. Although a small data set ($n = 7$), student feedback in Phase II supports the need for critical reflection previously outlined (Andrade, 2000; Clayton, 2009; Isaccson & Stacy, 2009), not only for documentation, but also to enhance motivation and engagement in the learning process.

One student's reflection regarding the use of rubrics in Phase II stated, "…creativity in teaching starts with the ability to teach in unexpected or unlikely situations. Teaching is not a matter of the quantity of the content, but the quality of learning. Although at first I disliked the tasks and found them cumbersome, as the semester progressed, these tools helped me assess my quality of learning in a way that had not been previously given to me. I find myself now thinking—what proportion of the task did I really complete? Am I comfortable and prepared? What did I learn?" This reflection exemplifies the concept of an engaged pedagogy and a shift in student perspective. Both engagement and perspective shifts are goals of applied learning and critical reflection (Clayton, 2009). As further evidence of this shift in perspective, anonymous sharing of student responses fostered discussion and greater willingness of student participation as observed by increased discussion in the classroom and peer-to-peer interactions in Phase II. Students rated their comfort level greater when the task was associated with the knowledge or comprehension levels than when the activity required analysis, synthesis, or evaluation. These reflections also raised interesting data regarding specific tactile sensations. The most difficult sensory perception to teach is temperature sensitivity. This perception is confounded when the ambient temperature is near freezing, such as that found in an unheated stable during the winter months. Development of standardized models aided in teaching this sense, although more work on developing reliable models is necessitated. Application of affective rubrics in other fields may aid in further elucidating the issue of student motivation.

FUTURE DIRECTIONS AND CONCLUSIONS

As an unexpected result, when techniques were demonstrated students focused more on trying to mimic exact movements, instead of reflecting on their own perceptions. When techniques were not dem-

onstrated, students developed their own approach to the task. The authors are currently investigating demonstration of a skill as compared to written or verbal explanation of skills, in relation to the learning and assessment process. This research direction builds on previous research (Meek et al., 2005) in combination with the questions regarding assessment found in this study. As a model for distance learning (either online or video conferencing), previously unpublished data regarding student perception of PowerPoint presentations was investigated in a small group of students ($n = 14$). For the test course, the content was presented solely through verbal explanation and writing on a white board. All students had previously been in equine studies classes which were taught using primarily PowerPoint lectures. Two questions were asked on a voluntary survey to determine student preference of delivery method: 1) I preferred that the professor wrote on the dry-erase board for teaching the course content; 2) I would have preferred that the professor had prepared all PowerPoint presentations for teaching the course content. Students evaluated these questions using a five-point scale from "strongly agree" to "strongly disagree". Student preference of dry-erase board was 100% "strongly agree" or "agree". Interestingly, only a total of 33% of students "agree" with the use of PowerPoint presentations for teaching content, without any "strongly agree" answers. The next step was to discern why students preferred the use of the dry-erase board. During an informal discussion, a main theme emerged. Students preferred the hand-written material because the course pace was slower and discussion more interactive than when using PowerPoint or other technology. This feedback conflicts with use of digital video technology in biology as an assessment of student-teacher interaction (Tan & Towndrow, 2009) and use of music recording software to motivate beginner musicians (Char, 2009). In equine studies, there is an increased pressure to be competitive with online programs such as business or health care administration. The experiential learning aspect of equine studies and other agricultural fields is what draws students to these programs (Lohuis et al., 1999; Meek & Marean, 2006; Reiling et al., 2003). In consideration of student feedback regarding PowerPoint utilization in the traditional classroom and Phase II observations presented, delivery method of applied skills and subsequent cognition of "how-to" perform that skill are not equitable in terms of learning and attitude towards learning. Therefore, the value of assessment tools, such as skills rubrics, combined with method of delivery warrants further investigation in an applied learning model.

Although the overall research objective was to promote standardization of hands-on skills, these data raise several interesting questions regarding applied learning pedagogy. Rubrics aided in student motivation to learn and perform skills when provided early in the learning process;

however, students may only work to a passing level or other level which they feel is acceptable for their personal goals. The assessment rubric assisted students in de-mystifying a novel task in the equine studies field, as documented in the focus group discussions. Tasks should be aligned with well-defined objectives which provide purposeful progression, and have measureable outcomes. Demonstration as compared to description of tasks delineated on an assessment rubric warrants more research. Students expressed motivation for and engagement in the learning process when using affective rubrics for self-assessment.