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Developing a Training Program for Instructional Assistants within a Large-Scale Emporium-based Environment: A Nine-Year Evolution Towards Systemic Change

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The Virginia Tech Math Emporium is a large-scale, computer-based learning lab supporting courses designed following the *emporium model* (Twigg, 2003). In this article the authors discuss challenges and solutions faced between the years 1997 and 2006 involved with hiring, training, and evaluating the staff of instructional assistants working in the Math Emporium. The discussion is grounded in literature from the fields of training and peer tutoring. Directions for future methods of training instructional assistants are suggested.

The Virginia Tech Math Emporium began operations in August 1997. The Math Emporium is a large learning environment housing 537 computers, lounge areas, breakout rooms, and presentation space in one 56,000 square foot room. It is open to any Virginia Tech student 24 hours per day, 7 days per week during a regular semester. In a typical semester, a dozen mathematics courses make use of the facility for group activities, online quizzing or testing, access to assistance with mathematics software, or delivery of course content.

In the fall of 2006, five courses were offered at the Math Emporium that were designed using what Carol Twigg (2003) lists as the *emporium model.* Twigg credits the development of the emporium model to Virginia Tech. Since its initial development, the emporium model has been implemented at several other institutions. As documented on the website for the National Center for Academic Transformation (*National Center for Academic Transformation*, 2006), courses in math have been transformed with the emporium model (e.g., Louisiana State University, University of North Carolina at Chapel Hill) as well as in other content areas such as introduction to computing (e.g., Rockford Business College).

All of Virginia Tech's courses designed with the emporium model have a similar structure. The content for the courses is delivered online via the World Wide Web. Each semester, learners enrolled in these courses have weekly quizzes, four to five tests, and a final exam. Aside from an initial face-to-face orientation meeting, the courses are completed asynchronously. Learners prepare for their quizzes and tests in several ways including reading the online lesson pages, watching supplementary video lectures, taking practice quizzes, and interacting face-to-face with math instructional assistants.

The staff of math instructional assistants is comprised of advanced undergraduate students, graduate students, and math faculty members. There are 40 to 50 staff members in a typical semester. During the fall and spring semesters, staff members are available for questions 12 hours a day Monday through Thursday, 5.5 hours on Fridays, and for 7 hours on Sundays. The number of staff members on duty at any given time ranges from as few as 3 to 4 during the morning hours to as many as 15 in the busier evening hours. The number of staff members and staffing hours are reduced significantly during the summer sessions as a result of lower course enrollment. Math assistants answer questions regarding course content, assist with software questions, and proctor tests. A few faculty members are specially designated as staff supervisors. Supervisors ensure that the staff of math assistants is working efficiently answering questions and properly covering the learners taking proctored tests. Proper supervision and efficiency are especially important given the scale of the operation. The five courses utilizing the emporium model have an average total enrollment of 4,500 learners each semester. Several other math courses use the Math Emporium resources as well. The 537 computers are routinely occupied with learners taking tests and otherwise working on their emporium coursework. The development of a training program to prepare the math assistants to help these learners will be discussed in the following sections.

The Early Years

When the Math Emporium opened in August 1997 it was the first facility of its kind in the United States and quite possibly in the world. It was created to support courses utilizing the emporium model, which was a new concept as well. The full extent of the training or special skills necessary for the instructional assistants working in the Math Emporium was not known. Undergraduate math assistants were recruited by the tutoring lab coordinator based on their perceived ability to tutor mathematics. A general advertisement was circulated to students enrolled in math courses and

interested students applied for positions. The application process consisted of a paper application and a recommendation from a Virginia Tech mathematics faculty member. Faculty submitting recommendations were asked to address the applicant's math ability, interpersonal skills, and reliability. Successful applicants were typically those with demonstrated proficiency in at least the first year of the calculus sequence for engineers and those who were given excellent recommendations by faculty. Additionally, graduate assistants from the math department would work routinely at the Math Emporium, either as their full assignment, or as a component of courses they were teaching. Math department faculty worked at the Math Emporium when they were teaching a course that utilized the Math Emporium, either in part or completely, as a course offered in the emporium model.

The use of undergraduate and beginning graduate students as assistants in the lab has provided two benefits. Learners benefit by having just-in-time access to one-on-one mentoring and guidance. Further, learners may identify more with assistants in their peer group, thus decreasing learners' anxiety to ask questions. The one-to-one guidance by peers is a strategy successfully employed by other non-traditional instructional environments employing a large number of peer instructional assistants such as the foreign language program at Ohio State University (Silva, Macian, & Mejia-Gomez, 2006). The Ohio State and other programs document the advantage of utilizing peers as instructional mentors in that they are more experienced and yet still accessible to learners in their same peer group (Eby & Gilbert, 2000; Silva et al., 2006). The math department has also realized a financial benefit. Employing the services of 25 to 30 undergraduate assistants, working an average of eight hours per week, has provided more contact hours of assistance than would have been financially possible using full-time faculty. Continuing to provide the learning support that students need and deserve while meeting the financial limitations in higher education environments, particularly in regards to issues of scale, is a documented challenge. Moreover, the employment of instructional assistants has been identified as a workable solution (Dornsife, 1999; Harris, 1999; Osborne, Norman, & Basford, 1997; Silva et al., 2006). Osborne, in particular, points to undergraduate assistants as a valuable resource.

During the 1997-1998 academic year the staff was supporting two courses offered through the emporium model. There were also components of other more traditionally offered courses that made use of the technology resources available at the Math Emporium. The bulk of learner questions came from approximately 2,500 students enrolled in the emporium-designed courses. Staff-learner interactions were almost always one-to-one interactions initiated by the learner. When learners requested help from the staff, a staffer would initiate a one-on-one tutoring session with the learner, perhaps providing mini-lectures on the topic of interest, or guiding the learner through the available resources for the course of interest to make sure the learner had attempted to find help prior to requesting personal assistance. If it was apparent that the learner had made no attempt to find solutions before asking for help, staffers using the guiding approach would ask the learner to work through the resources on their own and, if they needed it, to ask for help later. If it was determined that a learner had made a legitimate attempt to find an answer to a question, then the staffer would offer some assistance specific to the problem at hand. The one-to-one, just-in-time conditions allowed for a customized response from the instructional assistant tailored to the individual learner's needs and perceived circumstance.

Faculty supervisors mentoring the staff at the Math Emporium were quick to recognize the value of the guiding approach. The guiding approach informs the learners about the resources available to them and forces them to make some attempt at learning the material before requesting assistance, pro-actively addressing an identified concern of learners not doing the work (Dornsife, 1999). As the learners are acclimated to the guiding technique, this method reduces the number of basic questions for the staff allowing them to concentrate their time assisting learners with more difficult questions or concepts. The ability of senior staff and faculty to shift time from the more routine student inquiries to the more complex ones is a benefit of employing students as peer tutors/mentors. This benefit is observed in similar instructional programs in other disciplines including communications (Ross, 1990).

The staff developed a set of best practices for working in the Math Emporium including staying visible to learners by walking or standing; asking the learners to explain how they arrived at the point where they needed help; directing learners to relevant online resources; and never writing out solutions, but instead asking the learners to write as they received explanation. The math emporium's guiding technique highlights an important pedagogical shift that all instructional assistants must make in such a non-traditional learning environment as the emporium where the emphasis is not on one-to-many group instruction but rather on one-to-one learning support. As Dornsife (1999) points out in his discussion of training writing center peer tutors, the pedagogical focus of such training, regardless of discipline, must be "to assess what the client [learner] and client's professor want, and to respond accordingly as a surrogate or 'third party'" (p. 252). Such a pedagogical

approach is, by necessity, quite different from the still common direct instruction approach of the classroom. The pedagogical shift does mirror certain cognitive learning theories and corresponding instructional approaches. For example, Gagne's (Gagne, Briggs, & Wager, 1992) nine events of instruction illustrate a similar shift from "knowledge presentation" to "instructional support" as learners must move from early knowledge acquisition to practice.

Various methods were used to disseminate those practices to the staff of math assistants. Email message lists, regular staff meetings, and mentoring by the faculty supervisors were all utilized. The email message lists evolved into a mechanism for finding substitutes should someone need to miss a shift. While this was a necessary function, it was not helpful with training. Regular meetings of the staff were problematic from their inception. As the staff was comprised of students and faculty who were typically working part-time at the Math Emporium, classes, committee work, and various other responsibilities made finding a convenient meeting time for the large staff impossible. Mentoring by the faculty supervisors proved to be the most effective method of keeping the staff up to speed on current issues or training the occasional newly-hired staff member.

One faculty member experimented with ad hoc, just-in-time training to help the staff with a particular course. He would spend several hours per day at the Math Emporium observing the difficulties learners had with that particular course. Then he would pull aside a handful of staff members and coach them on effective ways to guide the learners through their problems. As shift changes brought in new staff, and even as the learners' problems changed, this faculty member would repeat his coaching process. This just-in-time training was a valuable tool for staff development, but it was short lived. It was a volunteer effort on the part of the faculty member and it required a substantial amount of his time. As course assignments changed and interest in other projects took precedence, this faculty member moved on and the just-in-time sessions were abandoned.

By the end of the 1998-1999 academic year the Math Emporium had been open for two years and the guiding philosophy of helping learners was firmly in place. However, the initial staff began to move on or graduate. Thus, there was a need to train a large group of new hires before the next fall semester.

The First Training Workshop

The first training workshop took place in August 1999 the week before the fall semester began. A listing of the workshop sessions is provided in Appendix A. The workshop consisted of three and a half days of sessions focused on software training and the guiding philosophy that had been in use for the previous two years, both situated in the context of courses utilizing the Math Emporium. Sessions were a mix of instructor-led information presentation, hands-on practice for the participants, group discussion, and role-playing. Logistical matters of working in the Math Emporium, such as how to fill out a wage employee timesheet and proper protocols for finding substitutes were also included in the workshop.

All undergraduate and graduate student staff members for the coming semester were required to attend the workshop and the faculty members with Math Emporium assignments were invited as well. Although we did not require faculty member attendance, it is a strategy recommendation offered by similar, non-traditional instructional environments. For example, Dornsife (1999) advocates for including faculty and student instructional assistants in the same training programs in his experience of initiating a large-scale peer tutoring program in a university writing center, particularly given a traditional organizational climate of "providing students with 'degreed' professional instruction" (p. 247). The close association of faculty and student staff members through shared training and other means can help to integrate student staff members into the larger departmental community and culture (Dornsife, 1999; Eby & Gilbert, 2000).

The main goal of the workshop was to give the participants enough experience with the course materials to get them easily through the first two weeks of their new jobs and also to explicate the guiding method that they would soon be using. It was anticipated that the training workshop would encourage feelings of professionalism and initiate a sense of community among the staff. The context of the workshop was essential. All of the workshop participants had excellent math skills, but not all were familiar with the courses making use of the Math Emporium. In particular, participants needed practice with courses that used Microsoft Excel or business terminology. Most of our math and engineering major participants had little, if any, experience with a business context. However, these business-related tools and concepts were needed for a business calculus course utilizing the Math Emporium,

The workshop concluded with oral *competency interviews* administered by the supervisor staff. All undergraduate student staff members were required to participate in a 15-minute, face-to-face interview with one of the supervisors. The interviews were casual conversations about what was covered in the training workshop. Participants might be asked how they would respond to certain learner questions or be asked to perform a specific task with a software package. The interviews served as a way to obtain information about

what was done well in the workshop and what might need improvement. Also, since the interviews were announced on the first day of the workshop, their mere existence served as a motivating factor for the participants. Undergraduate student employees were told that they could not begin their job without a successful interview. Interviews were not required for graduate student or faculty staff members. Work assignments for graduate students and faculty members were already in place for the semester. Changes in work assignments were not feasible; thus, interviews were considered to have no substantial purpose. If the training workshop had not done its job for these two subsets of the staff, on-the-job training and mentoring in the coming weeks would have to suffice.

Once a semester began, the training workshop was supplemented weekly with what has been termed *curriculum notebooks*. The curriculum notebooks are three-ring binders maintained by the various course personnel. They contain solutions for problems with which learners may struggle and tips for how to handle the concepts for the week. Staff members can review the curriculum notebooks before a shift begins or during shifts when they are not working with learners.

The training workshop design continued with little change until there was a desire for certification of the training program by an external body. Certification by a professional association would give the training workshop validity beyond the confines of the Math Emporium itself. Also, the peer-review process of certification would improve the workshop. We decided to seek certification of our training program through the College Reading and Learning Association (*College Reading and Learning Association*, 2006).

Certification

Certification of our training program was pursued for several reasons. A certified training program demonstrates to our learners, university administrators, and other interested parties that our program meets standards maintained by a professional association. Certification of the training program also may serve as a motivating factor during the training. Participants are informed from the outset of the training that the skills and knowledge covered in the training is part of a curriculum approved by a national organization. Further, they are informed that by completing the program they will be eligible to receive a certificate from our training program that will be recognized outside of the context of the Math Emporium, an outcome of potential benefit in future professional pursuits. Finally, the process of obtaining certification required an analysis of our operations and a period of reflection that could improve our training program.

The CRLA appeared to be the proper body from which we should seek accreditation, but an initial attempt to obtain certification of our training workshop was not successful. We decided to remove our application from consideration due to the disconnect between the certification requirements and our training workshop. The role of a Math Emporium instructional assistant is somewhat different from that of a traditional tutor and our training program did not fit well within their criteria for a training program. The CRLA criteria focused on a traditional tutor-tutee relationship in which there is time for goal setting and interactions over an extended period of time. In the Math Emporium the interactions between a learner and a staff member are substantive but not typically sustained over time. While nothing is done to purposely prevent a long-term relationship between a staff member and a learner, such relationships are not common in an emporium environment. After further consideration, however, the CRLA criteria encompassed concepts common to most of our staff members. Using their criteria as a framework for our workshop enabled us to highlight the differences, and some similarities, between the traditional role of a tutor and that of an Emporium assistant. As we spent more time considering the requirements of CRLA certification and the purpose of our workshop, the decision was made to create a new training program that would meet their criteria and better serve our needs. In addition, CRLA certification was already recognized on the Virginia Tech campus as having value and credibility. As such, obtaining the certification would give us more credibility locally as well as nationally.

The New Workshop

By the time we were designing the new workshop, we had experienced several iterations of our initial workshop curriculum and knew what aspects could be changed or removed. Some parts of the workshop were dropped, and others added. The net effect was shortening the workshop to two full days versus the original three and a half. The sessions provided in the latest iteration of our workshop are listed in Appendix B.

Some of the additions made to the program included: tutoring videos from North Carolina State University (*A look at productive tutoring techniques*, 2006) and a session on learning theory, instructional strategies, and methods for encouraging learners. The tutoring videos serve as an excellent point of discussion for our training program. We discuss how to effectively serve as a tutor and at the same time discuss how the role of a math assistant in our operations differs from traditional tutoring.

Students were now coming to us as new staff members with seemingly better software skills, thus less time was needed orienting staff members to the software. The time spent working with software applications was reduced and focused more on the context of our course materials. A session providing an overview of the courses utilizing the Math Emporium was eliminated since our courses had become more uniform in design.

We applied for CRLA certification of our new training program. An initial certification was obtained with no modification to our training curriculum. After the one-year initial certification, we applied for, and obtained a three-year renewal of our certification.

Assessment and Evaluation

Assessment and evaluation of the effectiveness of our staff of instructional assistants and the training workshop has been problematic. We have made attempts to gather information on individual assistants from our learners, but those efforts have proven to be unhelpful. Our largest effort in that regard was to have instructional assistants provide learners with comment cards much like ones received from servers in restaurants. Learners were to fill them out and deposit them in a box before leaving the lab. The data gathered with this method typically indicated that all of our assistants were excellent, all of the time. Further analysis of this technique revealed that instructional assistants would only provide cards to learners whom they felt confident were satisfied with their interaction. Learners often chose not to fill out the cards, as evidenced by the number of blank cards found about the lab. This data gathering technique was abandoned.

We have developed a three-tier system for assessment and evaluation of our instructional assistants and training workshop. The first tier serves to evaluate the training workshop from the perspective of the instructional assistants. Consistent with Kirkpatrick's (1998) level one "learner reaction" evaluation in his four-level evaluation model, we include evaluation surveys at the conclusion of each day of our training workshop. Workshop participants are asked to comment on the pace and content-level of the sessions as well to provide free response feedback on the sessions. In addition, we administer a follow-up survey approximately one month after the conclusion of the workshop. The instructional assistants have been on the job for three to four weeks at that point. The follow-up survey (Appendix D) asks the instructional assistants to respond to items such as, "The sessions on interpersonal skills and how to interact with students were helpful." The follow-up evaluation has proved the most useful to us. Only after working as instructional assistants can the staff members actually assess the value of the training workshop. The follow-up survey builds on Kirkpatrick's level one evaluation by moving toward a more sophisticated, level three phase that seeks data regarding transfer of training knowledge and skills to the job context.

The second tier of the Math Emporium evaluation system evaluates the instructional assistants from the perspective of the faculty supervisors. Near the end of each semester the faculty supervisors complete evaluations of each instructional assistant who works for them. The evaluation criteria (Appendix C) are shown to the assistants during the training workshop. The supervisors' responses are based on their observations and interactions with the instructional assistants during the semester, again mimicking Kirkpatrick's (1998) recommendation to seek level three "on-the-job" evaluation data. If problems arise with individual assistants before the end-of-semester evaluations, they are handled in an ad hoc fashion on an individual basis.

Input from the learners, yet another source of Kirkpatrick (1998) level-three type data, comprises the third tier of our evaluation system. The end-of-semester course surveys (Appendix E) include questions such as "I find the math helpers at the Math Emporium knowledgeable regarding the course material", and "The math helpers at the Math Emporium provide assistance that is useful to me." Results from these surveys aid us in determining how our training workshop might be changed to better address certain courses. Our continuing certification from the CRLA does not permit us to change our training curriculum substantially, but we can certainly improve on the content offered in the workshop, if we determine that it is inadequate.

Although we do have some forms of evaluation taking place at the math emporium, we recognize that more can be done in the future, particularly in regards to expanding the types of data sources and methods and even the types of questions asked. Eby and Gilbert (2000), in their evaluation approach to using undergraduate teaching assistants in a violence and gender learning community, provide a model for enriching our evaluation processes in three distinct ways. First, they collect data using the multiple methods of survey, interview, and reflective essay. Second, they collect data from the multiple perspectives of the student, the teaching assistant, and the faculty. Third, they ask questions regarding impact not just on learners but also on teaching assistants and faculty. Such a multi-layered approach would certainly provide richer opportunities for understanding and improving current math emporium operations.

Future Training Needs

The number of emporium-designed courses offered through the Math Emporium has steadily increased. As a result, the volume of notes necessary for our *curriculum notebook* resource for the staff has become cumbersome. The instructional assistants simply do not have time to review all of the notes necessary to prepare them to answer questions for every course. A solution may be revisiting the just-in-time training mentioned earlier in this discussion. Math faculty members coordinating the emporium-designed courses typically spend time in the lab as part of the staff of instructional assistants. Some learners use the terminology *teacher* for these faculty members, but *course facilitator is* a more cogent label. Whatever the label, these individuals may find that the time spent working with learners may be better spent training the other members of the staff.

A recent study by Hodges (2005) conducted at the Math Emporium found that while interactions with a course facilitator are viewed as positive experiences, few learners actually initiated sessions with their course facilitator. None of the participants in Hodges' study indicated that they regularly asked their course facilitator for help, and the majority of the participants indicated they had never asked their course facilitator for help. As such, the role of the facilitator in these courses is being reevaluated. Rather than having the course facilitators spend all of their time in the lab available to the learners, we are now exploring a revival of the just-in-time assistance to math instructional assistants. Multiplying the expertise of the course facilitators by having them train staff members in the just-in-time fashion described earlier may prove to be an appropriate alternative, or addition, to the current curriculum notebook method of weekly training.

Conclusion

The initiation and establishment of a large-scale, non-traditional instructional environment such as Virginia Tech's Math Emporium certainly presents its challenges. Further, although the first of its kind, the Math Emporium can benefit from the experiences of other similar innovative instructional environments such as Dornsife's (1999) writing center peer tutoring program. In fact, Dornsife provides a useful list of questions from the proposal on through the selection, training, and maintenance phases that we recognize as valuable for anyone undertaking a similar initiative.

In the nine years of operations at the Math Emporium we have developed a staff training workshop that has worked well for our operations. The original method of recruiting student wage employees has remained unchanged with the exception of how the students apply. What began as a paper application process is now done online. The application along with a faculty recommendation appears to be sufficient for selection. Including an interview along with a performance contract might enhance our process further. In fact, Ross (1990) provides recommendations and templates for doing so in her selection of undergraduate teaching assistants for a basic communication course that could readily be adapted to our Math Emporium and other environments utilizing instructional assistants.

As the number of courses offered in the emporium model at Virginia Tech has increased, we have begun to re-evaluate current methods of just-in-time training. Course facilitators may spend some of their time training the staff. Digital curriculum notebooks, akin to the type of hypermedia performance support systems advocated for by Tjahjono and Greenough (2002), might provide an online and searchable means for emporium staff to build and refer to a just-in-time, dynamic knowledge database. The former offers a relatively inexpensive, easy-to-implement, and, in our case, already pilot-tested strategy. The latter would certainly require more planning and resources, financial and otherwise. As we develop new models for staff training, we will pursue valid methods of assessing the performance of our instructional assistants.

Regardless of the particular approaches to selection and training of student instructional assistants in emporium-like learning environments, the benefits should not be overlooked and, indeed, may suggest more attention in the literature. Certainly, learners can benefit from the more individualized, one-to-one, peer-delivered support (Eby & Gilbert, 2000; Ross, 1990; Silva et al., 2006). In many cases, faculty and other non-student staff have noted advantages to working with student instructional assistants despite the time that may be invested in training and support. Such benefits include the re-allocation of precious time to more intellectually demanding problems and or students; the re-invigoration of teaching interests and practices that reflective opportunities with student assistants can stimulate; the overall enhancement of courses; and the opportunity to integrate the mentoring of senior students into professional practice (Eby & Gilbert, 2000; Ross, 1990; Silva et al., 2006) . Beyond students and regular staff, the benefits to instructional assistants are many-fold including the opportunities to revisit knowledge and skills through the act of teaching others, explore career options in teaching, skill-build as teachers, and develop experience in a professional work environment (Dornsife, 1999; Eby & Gilbert, 2000; Ross, 1990; Silva et al., 2006) – all of which can serve these assistants well in future employment searches and circumstances. The experiences of ourselves and others suggests that, if well-planned, implemented, and

formatively evaluated and improved, the use of peer instructional assistants in higher education instructional environments (traditional and non-traditional) can be of benefit on many levels. More empirical research evidence may indeed bear these experiences out and provide further guidance as to how to implement and sustain them.

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APPENDIX A
Sessions Included in Initial Training Workshop

Activity	Length of Time
Introductions and Discussion of the Math Emporium Mission	20 minutes
MATLAB in the context of our course	5 hours, 20 minutes
Microsoft Excel in the context of our courses	5 hours, 30 minutes
Overview of Emporium Courses	1 hour
Being an Effective Guide	30 minutes
Discussion and Role Playing	1 hour, 15 minutes
Computer Issues and Common fixes	30 minutes
Communicating on and off the job	30 minutes
Proctoring Tests	30 minutes
Competency Interviews	15 minutes per interview

APPENDIX B
Sessions Included in Latest Training Workshop

Activity	Length of Time
Welcome & Ice Breaker	20 minutes
Learning Theory & Instructional Techniques	45 minutes
Tutoring Videos and Discussion	1 hour, 30 minutes
Mathematica in the context of our courses	1 hour, 30 minutes
Evaluation Criteria	20 minutes
Computer issues and Common Fixes	30 minutes
Read information stressing tutoring techniques	Homework
Discussion of reading homework	30 minutes
Business Calculus terminology and course material review	1 hour, 45 minutes
Test Proctoring Demonstration and Role Playing	1 hour
Sexual Harassment Training	1 hour
Competency Interviews	15 minutes per interview

APPENDIX C
Supervisor Math Assistant Evaluation Form

Math Emporium Assistant Being Evaluated (Last name, First Name):

Type of Assistant

Wage/undergrad Grad student

Name of Supervisor Submitting Evaluation (Last name, First Name):

Your experience with this assistant:

Work together regularly
Work together some

Arrives on time. Stays visible and lets you know where he/she is if engaged outside the main floor area. Is responsive to suggestions and task assignments.

Excellent Good, above average Average Fair, below average Poor

Is patient and encouraging towards students who seek help, is courteous to both students and supervisors.

Excellent Good, above average Average Fair, below average Poor

Makes self readily available to students and keeps attention on them while on duty. Takes initiative, circulates at frequent intervals and stays alert to students who want help.

Excellent Good, above average Average Fair, below average Poor

Finds constructive tasks related to Math Emporium duties even when not fully occupied with student requests for help.

Excellent Good, above average Average Fair, below average Poor

Accepts specific assignments (e.g. test proctoring) with appropriate demeanor.

Excellent Good, above average Average Fair, below average Poor

Is capable of helping with a variety of courses.

Excellent Good, above average Average Fair, below average Poor

Do you recommend retaining this individual at the Math Emporium?

Yes No

Overall rating of this assistant:

Excellent Good, above average Average Fair, below average Poor

Additional comments

APPENDIX D
Staff Training Follow-up Survey

The following questions are yes/no, forced response:

After working at the Math Emporium for about 4 weeks, I think the training in August was a necessity.

The Mathematica practice has helped me be an effective helper.

The Excel practice has helped me be an effective helper.

The booklet I was asked to read was a good primer on what skills and knowledge are necessary for working at the Math Emporium.

The sessions on interpersonal skills and how to interact with students were helpful.

The session on learning theory and self-efficacy was helpful.

The series of tutoring videos I watched on-line was helpful in preparing me for my job at the Math Emporium.

The following questions are open-ended, free response:

Please describe the part of the training in August that has helped you in your job at the Math Emporium the most.

If you could make one change to the training workshop for next year, what would it be?

APPENDIX E
Sample End-of-Semester Course Evaluation

Directions: Please complete the following survey to help us understand what you thought about this math course. Your responses will help us improve the course. Your student number is requested for statistical purposes only. Your responses will in no way affect your grade.

Note that unless otherwise indicated, learners select their choice of response from:

Strongly Disagree Slightly Disagree Slightly Agree Strongly Agree Not Applicable

Questions constructed specifically about the staff are in **bold.**

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1. I already knew all of the material covered in this class.
2. Mathematics makes me feel uncomfortable and nervous.
3. It is clear what a student must learn in this course.
4. I gear my studying closely to just what seems to be required for quizzes and exams.
5. The lesson pages are easy to follow.
6. The illustrations and animations in the lesson pages are helpful.
7. The lesson pages prepared me for the quizzes and tests.
8. I work through all of the examples in the lesson pages before taking a practice quiz.
9. The practice quizzes are helpful to me in this course.
10. The "Note" links in my graded quizzes and tests help me understand how to work problems that I did not answer correctly.
11. I focus on the topic areas on which I have performed poorly on practice quizzes when I study for tests in this course.
12. I found the printed textbook useful.
13. The online videos for this course are helpful.
14. It is clear what a student must do in order to earn a good grade in this course.
15. **The math helpers at the Math Emporium provide assistance that is useful to me.**
16. **I find the math helpers at the Math Emporium knowledgeable regarding the course material.**
17. **I find it easy to understand the helpers at the Math Emporium.**
18. Communicating with the teacher via email is easy.
19. My questions are successfully answered via email.
20. The weekly help sessions at the Math Emporium are useful.

21. Compared to other courses, I am better able to manage my workload in this course.
22. My ability to manage my time for this course improved during the semester.
23. On average how many hours per week do you spend on this course?

    Less than 1 1 to 4 5 to 8 9 to 12 Greater than 12

24. This course is better than I thought it would be.
25. Overall I am satisfied with this course.
26. I would recommend this course to others.
27. I am pleased with the transportation to and from the Math Emporium.
28. There is ample workspace around each computer at the Math Emporium.
29. The lighting at the Math Emporium is sufficient.
30. The overall physical atmosphere at the Math Emporium is pleasing.
31. The noise level at the Math Emporium makes working there easy.