

MATH EMPORIUM
SUPERVISOR'S MANUAL
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The primary job of the Emporium supervisor is to ensure that students get prompt and effective help when they need it. This is a big job — really big when the facility is busy — and very different from any traditional academic assignment. This document is the first draft of a manual describing responsibilities and procedures. It is based on only a few months experience, so is very preliminary. Some parts, eg. those concerning training and consultants, are untested. These are a guess at how to address a need, but may require substantial modification in practice. Feedback on all of this is urgently needed.

Basic procedures are described in the first section (Floor Management). This is addressed to anyone working as a supervisor. The second section (Assignments and Training) mainly concerns long-term or professional supervisors. An appendix on assessment may be useful for Emporium administration.

1. FLOOR MANAGEMENT

This section describes routine operations and procedures for supervisors. The term “helpers” refers principally to graduate and undergraduate students. In fall 1997 essentially all floor helpers were students, and this will probably develop as the standard situation, with faculty working as tutors or on-call consultants. Faculty members working as helpers may want to determine their own activities, rather than acting on direct instructions from the supervisor.

1.1 Supervise, don't help. Supervisors often come from an instructional background, and enjoy working directly with students. This is appropriate during very slow periods. However usually the need is for the supervisor to have constant awareness of the overall situation, to maintain balance and keep it going smoothly. This means working with the helpers, not the students. A supervisor who prefers working with students should request reassignment.

1.2 Maintain circulation. Helpers should periodically walk through all areas outside of the testing area. This serves three functions. First it keeps helpers alert for requests, and the physical change in perspective helps them spot requests. Second it reminds students that help is available. Physical proximity of a helper often helps a student overcome discomfort at having to ask for help, or concern about “bothering” someone with minor problems. The third function is that it inhibits inappropriate use of the facility. It should be emphasized that helpers are not police, and their effectiveness will be reduced if they come to be seen as police. Emporium policy allows any legal and non-disruptive use, including games with sound on headphones. However it is good to have a mechanism for spotting problems, and in practice the presence of helpers seems to inhibit even allowed non-academic use.

The supervisor should have a rough idea of circulation frequency in different areas, and if an area seems to be neglected ask a helper to take a turn through it. Experienced helpers will tend to do this by themselves. However it will happen that all helpers in an area are busy with students, and the supervisor should send someone from another area to be able to respond to further requests.

1.3 Assign testing staff. Testing is conducted in a designated area, which should have its own staff and often a zone manager. When they are not actively involved, the test staff should stay around the periphery of the test area to monitor it. Helpers should not wander through the area since this is distracting and we do not want to encourage help requests during tests.

The supervisor should monitor the testing area to see it is appropriately staffed. There is huge variation in this: certain days are heavy, certain times of day are heavy, and it even varies minute-to-minute. Students tend to arrive in bunches corresponding to the bus schedule, and since tests are designed to be about an hour in length, they tend to finish in bunches synchronized with new arrivals. It is not necessary to assign enough staff to competely handle peak moments: it is ok for it to occasionally bog down for five minutes or so since these peaks are usually followed by valleys when things clear up. However an important point to assigning staff specifically to testing is to avoid having them wander off during a lull and then not being available when need picks up.

1.4 Balance the workload. Helpers are assigned fixed hours. Students come in rather randomly. This means the facility will almost always be either understaffed or overstaffed. The supervisor must respond to these conditions.

Understaffed periods. Serious overloads are uncommon: staff schedules do reflect whatever large-scale patterns can be found in demand, and the number of staffers is intended to be sufficient for most of the larger fluctuations rather than the average. When things get really busy the supervisor should:

- (1) be sure helpers know to do only what is absolutely necessary. Evaluations and extended sessions should be avoided. They can suggest that students with greater needs should avoid peak times: “we are able to help a lot more in the mornings”;
- (2) Ask for volunteers to stay extra time, and look for off-duty helpers in the lounge area. Note, however, that overtime is compensated in different ways. Undergraduate helpers are paid hourly and are often glad to get extra hours. Graduates and faculty are on salary, so compensation should be time off at another date. Appropriate records should be kept.
- (3) Bring on-call or on-line staff (consultants) onto the floor. This may also raise compensation issues if consultant hours are counted at a different rate than floor hours.
- (4) Make sure the testing area is appropriately staffed, even at the expense of the rest of the floor.
- (5) Stay visible and available, so helpers can quickly refer problems.

Other than this there is not much the supervisor can do. In particular attempts to manage things on a small scale are more likely to slow them down than to help. Stand back and let the operation run itself.

Balanced periods. Between under- and overstaffing is the comfort zone, with everyone busy but not overloaded. The supervisor should stay available and watch for uncovered areas. Again the operation should mostly run itself during these periods.

Overstaffed periods. Overstaffing is more common than understaffing, and brings a different set of problems. For the supervisor these can be busier times than

overloads. If there are too many helpers on the floor they may congregate and chat, or wander off to surf, check email, or do homework. But this is often a management problem, not a discipline problem. The overriding criterion for selecting helpers is ability to help with math. This is not correlated with other skills, attention span for instance. So while some helpers stay on task under any circumstances, others get bored and drift off, and we had one that actually hid while on duty. Extreme cases should be disciplined, but with others our job is to do the best we can with the people we have to work with. Find procedures that keep them productive, rather than force them to follow procedures that they don't find comfortable. For instance, if the supervisor keeps more people than needed on the floor and tries to keep them moving, many of them will see it as pointless and demeaning, and not be cooperative. But if the supervisor sends enough off the floor so the ones remaining have clear and reasonable responsibilities, they will respond by willingly fulfilling them. Breaks during slow periods are therefore important tools for maintaining morale and keeping helpers on task. Procedures are:

- (1) Breaks should be for a specific time, and helpers on break should go to a remote area. This clarifies the distinction between on-break and loafing, for both helpers and students.
- (2) The supervisor should keep a written record (chart) of who is on break and when they are coming back on duty. This helps keep break assignments fair, and helps planning break schedules ("as soon as X comes back on duty you can take a 20 minute break.")
- (3) Generally breaks should not be in the first half-hour on duty, or the last half-hour before going off duty. In particular it seems best to avoid letting people go early rather than giving breaks. "Early release" is harder to distribute fairly since it would have to be given to different people on different days rather than different times in one day. It invites negotiation: "instead of a break now, can I leave early?" This can lead to coverage problems at the end of a shift, and again fairness concerns since some people are more aggressive than others about asking. When things are really dead, however, you could move everyone's departure time up uniformly.
- (4) For the most part breaks, particularly short ones, should be unprogrammed. Some helpers have trouble changing gears from help mode to study mode, and cannot use breaks effectively to work through course material.
- (5) When hour-long breaks are possible a group can be assigned to work through some material together. They find this particularly constructive if they have been getting a lot of questions on the material, and they can look for reasons students are having trouble with it. Doing this as an interacting group works much better than having them work alone.
- (6) Another possibility is to have "buddy hours" when helpers go around in pairs taking turns helping and observing. This should be kept informal to avoid bothering the students.

1.5 Appoint zone managers. Sometimes the active area is too big for a single supervisor to monitor it all, and designation of zone managers may be appropriate. It is particularly useful to have someone specifically looking after the testing area. However we should probably keep these arrangements flexible. The supervisor is still responsible for balancing helper assignments to the zones.

1.6 Assignments and assessment. The supervisor assigns jobs. Factors going

into assignments are discussed here, along with some assessment activities that can be part of the supervisor's routine. Assessment is discussed in more detail in an appendix.

The first assignment issue is a round-peg, square-hole problem: there are a variety of jobs to be done, and some helpers fit better in one than another. The supervisor should be aware of the differences and allow for them.

- (1) Some helpers like to keep moving. These are best not be assigned to testing since they get restless and distracted.
- (2) Some like to sit down, but can stay alert while sitting. They do fine with testing, but when assigned to circulation will take sitting breaks, especially if demand is low.
- (3) Some helpers have communication difficulties that keep them from effectively diagnosing student problems. These should be assigned to testing, or instructed to refer unclear problems to another helper.
- (4) Some like to spend extended periods working with students. This is ok during slow periods, and provided it is what the student really wants. The supervisor must watch for them to drop out of circulation and leave part of the floor unattended. During busy times they might be reminded to avoid long sessions. Helpers with these preferences can be used to go over tests: have them wait on-call near the testing area and have testing staff offer this service. They might also be encouraged to apply for transfer to the tutoring staff.

Helpers will learn what they are good at and enjoy, and may request assignments. During busy periods these should be honored as much as possible. When things are slow some rotation should be encouraged. In particular people attracted to the testing routine should spend some time helping on the floor so they will be ready when really needed in an overload situation.

When the floor is not busy the supervisor can do some informal assessment: drop by after a help session and ask the student "are you ok now?" Or drop by during a long session to ask "are y'all doing ok here?" If it is clear that the helper is not being successful with the problem, or that the student has lost interest and wants to catch the next bus, discuss this later, not in front of the student.

1.7 Keep the log. Helpers should report to the supervisor when arriving, and again before leaving. The nature of any oddities should be entered in the log: was an early departure a supervisor's decision due to low demand, or was it to study for a test, with the understanding that it would be made up later? Did a helper not show up, or were they sick and sent directly home by the supervisor? Was a helper not assigned for duty but called in to help with an overload? The start and end of breaks should be noted so that they can be staggered and assigned fairly. Finally any observations about assignments can be made in the log.

2. ASSIGNMENTS AND TRAINING

Assignments divide into three main groups: managers, floor helpers, and consultants. Supervisors should be familiar with the duties and expectations of all of these, since they are responsible for getting everything to work together. Assessment and problem identification are discussed in the next section.

2.1 Managers. The supervisor is the principal, and often the only, manager on

the floor. When the active area gets large the supervisor may subdivide it into zones and appoint “branch managers” for the zones. Supervisors who expect to need zone managers should watch for appropriate skills among their helpers, and give them some training. Ask about previous experience. If we find someone who has managed a McDonalds at lunchtime we should ask them to train us.

Probably the best training for managers is to have them work with an experienced supervisor: follow around and watch for a while, then take the lead. Make sure the helpers understand what is going on, and that the trainee is supposed to be providing instructions to them. The trainer should be careful not to directly contradict or correct the trainee: helpers will pick up on this immediately, and it may cause problems later. It would be better to watch from a distance and then consult privately.

2.2 Floor helpers. Floor helpers are primarily graduate and undergraduate students. They are expected to be able to deal with test administration, minor machine or software problems, and material from lower-level courses. The procedure for a help session is:

- (1) Diagnose the problem. This step is crucial and requires careful attention. The student will say what they think the problem is, but they are not always right. For instance “Mathematica problems” in calculus labs may turn out to be conceptual problems with calculus.
- (2) Figure out what to do. Possibilities are:
 - i) give help;
 - ii) get them started and tell them you will come back to check on their progress;
 - iii) call in a specialized consultant if one is available;
 - iv) suggest coming back at another time for specialized help or tutoring.
- (3) be sensitive to changes in need or interest, for instance if they want to quit so they can catch the next bus, even if the problem has not been resolved.

Testing schedules and policies should be conspicuously posted, so helpers can either become familiar with them or easily refer students to them. Helpers should know which (if any) consultants are on duty, and when tutoring and other specialized help is available.

If a helper thinks someone should see a tutor they might get their name and try to arrange a particular time. There are several points to this: a tutor referral often follows an unsuccessful help session, and a specific arrangement helps keep the student from feeling abandoned or let down; it may encourage the student to actually get help; a note from the helper to the tutors will give them a head start on understanding the problem; and finally we can keep records. If a student fails the course then a record of referrals will be helpful for department use, especially if they didn’t show up.

Training for helpers will start with orientation sessions and written material. However some helpers are shy or anxious, and even for bold ones there is no substitute for experience. Probably the best approach is to pair new helpers with experienced ones for on-the-job training. Trainees can watch for a while, then take over, or take turns. Trainers should be cautioned not to micromanage trainees. For instance the trainer may see that the trainee has an incorrect diagnosis or an inefficient help strategy. But this happens to everyone, and learning to recognize and correct these errors is an important skill. Trainees should be allowed to de-

velop their own styles. Finally, trainers should not be asked to grade or evaluate trainees. The objective is an atmosphere conducive to training and development of a sense of common purpose and community. Requiring evaluations will inhibit this. And they aren't needed: the very few problem cases will quickly come to the supervisor's attention anyway.

2.3 Tutors and consultants. Tutors are available at certain times for longer sessions going over course material or tests. They usually have a higher level of training or familiarity with the material. For the most part they are not the responsibility of the floor supervisor. However,

- (1) if a floor helper seems attracted to tutoring-type activity, they might be encouraged to transfer, or find out what additional qualifications are required and start working through the material;
- (2) if tutors are busy but the floor is relatively quiet a helper might be reassigned to tutoring. Or helpers on break can be stationed near the tutoring area to be available if needed;
- (3) in emergencies tutors might be asked to help out on the floor; and
- (4) if helpers refer students to tutors then some mechanism should be available for recording and tracking this.

Consultants help with difficult problems, but at a machine and on a shorter time scale than tutors. They are called in by the floor helper when the helper gets stuck. At the time of this draft there is a clear need for this sort of support but we have not actually tried it out. Important issues for the supervisor will be:

- (1) training floor helpers to recognize when a consultant should be called;
- (2) encouraging helpers to watch consultants and learn from them (if the floor is not too busy and they think it would be worthwhile); and
- (3) gathering feedback from the helpers on effectiveness of consultants and consulting techniques.

As always, this feedback should be used internally for improvement, and as little as possible for evaluations for outside use. If there is much leakage in the way feedback is communicated, it should probably be discontinued.

APPENDIX TO SUPERVISOR'S MANUAL: EVALUATION

Evaluations address contributions to three sets of goals: University, education, and emporium function. Some care will be required to keep them properly balanced and properly used. It should be emphasized that the proper objective of assessment is improvement, not reward or punishment.

A.1 Differences from classroom assessment. The traditional situation has a large number of largely autonomous classes, and instructors with relatively uniform responsibilities. Difficulties in one class have little impact on others, and there is little to be accomplished by reassignment. As a result at the departmental level there has been only modest interest in, or use for, teaching evaluations. Primary pressure for them comes from higher levels, and consequently they mainly address the concerns of these higher levels. Primary among these concerns is how the students feel about the educational process.

The emporium, by contrast, is a highly organized and interdependent enterprise. It makes a difference to the whole how well each individual does his job. Further there are a wide range of jobs to be done, so if an individual does not fit in one there is a good possibility of finding a better fit elsewhere. This means that in the emporium assessment for internal use is much more important than in traditional situations. It also means assessment must address real organizational needs. Uncritical transfer of previous methods (eg. student evaluations) will not be satisfactory and will reduce supervisors' effectiveness.

A.2 Addressing university goals. At this time the University has clearly articulated goals in increasing course retention and overall graduation rates; improving student satisfaction with the process; and reducing the faculty/student ratio. Most of this doesn't concern emporium supervisors. The emporium itself should enable faculty reduction, and courseware designers are responsible for retention issues. Supervisors are responsible for smooth functioning of the facility, so student perception of the program as a whole will be a component of their evaluations. However deciding what to do about this is primarily an issue for the director. Supervisors' main concerns with student feedback will be with comments on individual helpers.

Supervisors should watch formal assessment materials to be sure they separate the program and individual helpers. Crossover comments will pollute information about individuals, and mean they cannot be given much weight.

Patterns in student comments can be useful. Negative comments might indicate reassignment or further training is appropriate. Helpers with positive comments might be asked to mentor others. However as suggested in A.1 the crucial issue is what should *not* be done with student evaluations. They must be kept clearly secondary to evaluations made by supervisors. The staff must function as a team to best meet the needs of the students as a whole. Sometimes large-scale needs will conflict with the desires of an individual. Helpers should be diplomatic and sensitive, but should not be held hostage by the possibility of a bad evaluation. Further, the goal of a helper should be to facilitate the learning process, not simply to earn a good evaluation. Overemphasis on evaluations will subvert this goal.

A.3 Functional goals in the emporium. Providing quick and effective help is a team effort. Here we consider how well individuals contribute to the physical functioning of this effort; educational effectiveness is addressed in the next section.

Appropriate questions include:

- (1) Does the helper arrive on time, and check in with the supervisor when arriving and leaving?
- (2) Do they accept assignments from the supervisor, and carry them out willingly?
- (3) Do they stay on task, eg. stay alert and responsive to help requests?
- (4) Do they return to check on students they have helped?

In a great many cases improvements can, and should, be achieved through refinements of the supervisor's own practices. For example, helpers are selected for their technical skills, not their docility, and often don't like being given direct orders. The good news is that they are intelligent. If they are treated with dignity and fairness, and the tasks assigned make sense to them, they will almost always respond well. For instance if someone is checking sports scores on the web, there may be too many helpers on the floor. Send enough off so it makes sense to the ones left that they should stay on task. If overstaffing is the real problem then a simple order to stop surfing will not make sense to them and not be effective.

It will often happen that assessment information should be shared among supervisors. "X doesn't like walking, but does ok with testing." "Y was late today; if it happens again tomorrow say something to him about it." "Z couldn't concentrate today. Is this a frequent problem?" It is crucial that this *not* be entered in permanent records or referred to the director for action. It is a collective effort to improve operations, and higher-level reactions will either stifle it or cause problems with the staff. Supervisors should be explicit about how comments should be used, and the director or assessment scorekeeper should not respond to or try to intercept anything not explicitly addressed to them.

3.4 Educational goals. In the end the core objective of the emporium is to help students learn. Most of this document is concerned with physically getting a helper to the student. The issue here is: once they are in place, how well do they actually promote learning? Appropriate questions for floor helpers are:

- (1) Do they listen to the student, and diagnose the problem before launching into an explanation?
- (2) Are they able to help with minor machine problems and material they are supposed to know?
- (3) Do they call in specialized help when they can't handle the problem?
- (4) Are they sensitive to changes in student needs, eg. recognizing when the student should work by themselves for a while, or when they want to quit to catch the next bus?

In fact it will be almost impossible to directly assess this. A supervisor or evaluator cannot listen in on a help session without disturbing it. But direct assessment is largely unnecessary. With initial training and by watching more experienced helpers most helpers will steadily improve. Genuine problems will become visible in one way or another. Suspected problems might be monitored with follow-ups, as suggested in 1.5, or the helper paired with a mentor for further training.

In contrast to the situation with floor helpers, supervisors may get quite a lot of information about educational effectiveness of consultants. Consulting sessions may often be observed by the referring helper, and they will report back to the supervisor. The best way to use this information constructively remains to be seen.

Similarly, supervisors may be well positioned to collect information about courseware problems and effectiveness. We certainly need such information, but whether this is a good way to get it is yet to be determined.