

A Course on

HETEROGENEOUS CATALYSIS INVOLVING VIDEO-BASED SEMINARS

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WE HAVE OFFERED, for the past three years, a specialized seminar course entitled "Seminars in Heterogeneous Catalysis" to students in our research groups on alternating quarters, usually fall and spring. The original purpose of these seminars was to bring about a feeling of unity to our program of heterogeneous catalysis and to help educate our students on the nature of catalysis outside the formal graduate lecture course we offer once a year under the same name: Catalysis. After the initial start-up of this seminar course we explored the benefits of such a communications-based course which included the transfer of information between graduate students working on similar problems and the improvement upon communication skills. The next logical extension of the course was to formalize the feedback mechanism by which students could learn of their strengths and weaknesses. Our first attempt at this feedback was rating sheets on which the audience would mark the performance of the presenter as "good" to "poor" for various aspects of the seminar presentation, such as clarity of ideas, organization, and the mechanics of the presentation (including quality of visual aids, nervous mannerisms, etc.). As a result of this rating system, we noticed a significant improvement in the quality of the presentations, in both the content and the style of presentation. An integral part of the seminar program was a question-and-answer period that followed the formal talk. As with all novice speakers, the reaction to such interrogation

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ranged from fright to morbid fear. However, the more experienced students began to see the value of such questioning which forced the speaker to defend his research and resulted in a better understanding of the work. In time, a fraction of the students began to look forward to such question-and-answer periods, except when they were the presenters. As a result of the success of the feedback rating procedure and through a desire to have further improvements in the seminar presentations, we chose the video-based format to affect such improvements.

MECHANICS OF THE COURSE

The video-taping of a formal presentation shows both similarities to and differences from the familiar seminar format. Among the similarities, the speaker must convey thoughts through words and illustrations which must be organized into a cohesive unit. In one sense, the video-based format demands better organization of the talk because of the time limit imposed by rental of the on-campus taping studio. The setting of the video seminar was a classroom equipped with cameras

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in discrete locations and with classroom-type tables having small monitors located on them. An audience was present for all the tapings, and the lighting was only slightly brighter than normal room conditions. These "familiar" conditions help put the presenter at ease.

However, the differences associated with videotaping are significant. Usually there were one or two operators present in a control booth behind the classroom to focus the remote-controlled cameras and to record the talk. The students became aware of the importance of communication between the operators and themselves to ensure the proper camera position when illustrations were used in a presentation. In essence, the student became both the star and the director in taping the talk. Finally, fear of the unknown, coupled with the excitement created by the medium of television, made this experience something quite different.

We tried to meet some of these differences with some preproduction planning and preparation. During the quarter immediately before the taping, the students were given an article entitled "The Video Performer," by Norm Herman (Educational and Industrial Television), which is aimed at helping the first-time TV star to avoid some common mistakes. Additionally, the students were asked to submit titles and one-page abstracts of their talks before the quarter began, to facilitate early planning of the seminar content. Dave Edwards, Assistant Director of the Department of Continuing Education at Georgia Tech, suggested we have two class sessions of planning and preparation before the actual seminars were taped. The first session would involve Dave giving a short lecture on the *dos* and *don'ts* of videotaped presentations, followed by a short presentation by this author demonstrating some of the ideas. The students seemed to appreciate my feeble attempt to make them feel at ease by blundering my way through the presentation. The second session was a three-minute taping of each student giving his seminar topic and abstract; this taping was followed by a review of all the presentations. This preliminary taping session was a good way of demonstrating how difficult it is to produce an error-free talk with only one shooting.

Additional pre-production preparation involved a series of meetings between the student and this author to determine the scope of the 20-minute presentation, to write a sketchy outline (followed by a detailed outline), and finally to re-

view the illustrations for content and quality. We have found that these pre-production meetings are essential to producing a quality seminar for taping. Finally, each student met with the camera operators to review the illustrations on camera and to discuss the camera angles, etc.

The studio was equipped with three cameras operated by remote control from the booth. Two of these cameras afforded shots of the commentator while the third, an overhead camera, was used exclusively for the illustrations. The side camera could be used to give angle shots of the speaker, whereas the main camera gave head-on shots. When appropriate, the side camera was used to give better definition of three dimensional models. Titles and names could be superimposed under the speaker and split-screens could be used for extended discussions of illustrations. Although not used in these seminars, split-screens and chrome-key facilities are available in our campus studio; needless to say, these exotic techniques require more pre-production planning and direction on the part of the student. Our experience shows that the most successful talks, in terms of clarity and

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freedom of errors, were those which used a minimum of visuals and few exotic techniques; as the speakers mature, these other techniques will certainly enhance the professional nature of their talks.

The review of these seminars commenced immediately following the talk. The objective of this review was to show the student the success/failure of his attempt to communicate a technical subject in a formal setting. Success could be evaluated in terms of how clearly the student told his story. Did he connect the major points of the topic with good transition sentences? Was the logic sound? Did the illustrations convey the essence of the thought with a minimum of information? In short, did the student give a talk which was enjoyed by his peers? During the review process I would comment on the positive and negative aspects of only the more subtle points; there was no need to comment on the obvious blunders. Also, the students became aware of distracting mannerisms such as throat-clearing, nervous hand-waving,

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departmental organization of the Thayer School. □

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and use of non-communicative words such as "uh", etc. Sometimes the review sessions were absolutely devastating for the presenter since these mannerisms are greatly "amplified" by the video camera

and, of course, preserved for posterity. However, I was pleasantly surprised by the light-hearted attitude with which all students received the review process. There was much good-natured kidding about the errors, and no one seemed to be embarrassed or hurt by the review.

The two best presentations (i.e. free from errors) were edited, together with my brief comments, into one tape which we shall use as a means of external communication to industry and to other academic institutions. For example, I plan to send this tape to some industry contacts to introduce our research group and to precede my visit to a group I have yet to meet. Secondly, this tape may be used as a subtle recruiting aid at academic institutions which I may visit. Students seem to listen intently to their peers regarding graduate research experiences.

REACTIONS TO THE VIDEO SEMINARS

The student reactions to this new format were varied. Some met the video-based seminar course with enthusiasm, some with fear, and some with indifference. A few were cynical about the value of a seminar course which did not allow a tough question-and-answer session. Many felt that further refinement of their seminar mechanics was unnecessary. The professors showed the opposite feelings, perhaps as a result of years of teaching and giving technical presentations—seminars. However, after the taping all were of the same accord. Moreover, the students became more aware of the original intent of this experiment: to provide a new format which would allow instant feedback on a seminar presentation. The video-based format best satisfies that need for instant feedback.

CONCLUSIONS

In conclusion, this brief experiment with video-based seminars was successful with regard to the original intent of improving visual communication skills in a formal seminar setting. This format is suitable for use as an occasional tool, preferably with students who have had some experience in seminar presentation. We may not repeat this experience until at least six to eight quarters have elapsed. □

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