

# A Hands-on Discussion of “Dissection”: Coalitions Lessons Learned

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**Abstract:** A number of schools across the country associated with the NSF coalition program have incorporated the study of the artifacts and processes practiced by others into their engineering undergraduate programs. Broadly labeled, this is "case-based learning" and is nothing novel (even in design education). For example, ASEE sponsored the development of a series of design-based case studies in the 1970's. One recent "twist" to case-based learning has been to have the basis of the case study be the hardware itself. For example, Sheppard initiated a course in the fall of 1990 for freshman- and sophomore-level undergraduate engineering students called "Mechanical Dissection" with NSF Synthesis Coalition sponsorship [1,2]. The course was created to help students become familiar with the machines/mechanisms that surround them in order to help them gain confidence in their ability to work with, build up and manipulate them. Another variation of the dissection approach is offered at North Carolina State [3] in the "Product and Process Engineering Laboratory" where students dissect products while playing the roles of user, assembler and engineer, in series. Still another variation exists at UC-Berkeley, where students dissect products in conjunction with a multimedia case study that offers perspectives of the engineers who actually designed the product and explanations of design details [4]

In this session, these and other variations of the "product dissection" approach to exposing students to hardware and design issues will be demonstrated. Attendees will become participants in hands-on demonstrations. A discussion on the advantages and limitations of this pedagogy will follow.

## References

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2. S.D. Sheppard, "Mechanical Dissection: An experience in how things work," Proceedings of the Engineering Education: Curriculum Innovation & Integration, Santa Barbara, CA, Jan. 6-10, (1992).
3. D.L. Beaudoin and D.F. Ollis, "A Product and Process Engineering Laboratory for Freshmen," ASEE Journal of Engineering Education, July, p. 279-284, Vol. 84, No. 3, (1995).
4. W.H. Wood and A.M. Agogino, "Engineering Courseware Content and Delivery: the NEEDS Infrastructure for Distance-Independent Education," accepted for publication in the Journal of the American Society for Information Science.