



ACADEMY OF
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How Material Objects Shape Student Team Learning Processes

Teaching Material based on:

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The author consents and encourages other scholars to use this material for their teaching.

Pedagogical Note

These slides present analysis of how mundane material objects, such as white boards and flip charts, effect student team learning processes.

As such, they are well-suited for informing the teaching of courses at all levels, including but not limited to strategy, leadership, entrepreneurship, and management courses.

If you would like to further discuss content of these slides, please feel free to get in touch:

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Material Objects

- Management educators rarely consider how the material objects in their classroom effect student learning
- While there is some literature on how playful material objects such as LEGO© bricks and Tinkertoys might expand the learning process, we know little about how mundane material objects impact team learning processes
- Yet our classrooms are characterized by mundane objects such as desks, computer screens, pens, and notepads
- Our study therefore looked at how mundane objects – whiteboards and flipcharts – shaped how students participated in team learning processes when undertaking strategic analyses in a strategic management classroom

How We Studied The Issue

- We studied how students recorded PESTEL, Porter's Five Forces, and VRIN analysis of case study organizations on white boards and flip charts
- We engaged in 110 hours of observation across two semesters, took 484 supplementary photographs, solicited reflective comments from 61 students, and undertook formal interviews with 9 teaching assistants
- We found the white boards and flip charts (material objects) possessed the following properties which shaped student team learning:
 - Location (static vs mobile)
 - Record-keeping (temporary vs permanent)
 - Form (whole vs segmented)
 - Sensation

Location (static vs mobile)

Static Location (whiteboard)

- Observation: the scribe stands on tiptoe and reaches up to write high on the whiteboard, contorting her body as she writes and progressively crouching down to write at the bottom. A white space remains at the top of the whiteboard where she is too short to reach.
- The static location of the whiteboard reduced a student's agency over how they used their own body when they physically interacted with other students and the material object during team learning processes

Mobile Location (flip charts)

- Observation: the scribe stands upright as he writes, slowly arching his back as his writing progresses down the paper. When he nears the bottom third of the page, he detaches the paper and re-attaches it higher on the wall so that he can resume writing in a more comfortable position.
- The mobile location of the flip charts presented students with more agency over their own body as they physically interacted with people and objects when performing team tasks

Record-keeping (temporary vs permanent)

Temporary record-keeping (whiteboard)

- Observation: “Let’s write down all of our ideas first,” a student suggests... The scribe continues writing ideas as everyone brainstorms. Team members then review the ideas... The group continues reviewing the entire whiteboard, correcting spelling mistakes, deleting or rephrasing inappropriate ideas, and adding “YouTube” as another example of substitutes.
- Through its temporary record-keeping property, the white board supported an expansionist approach to solving problems, because teams could change their ideas as they were going.

Permanent record-keeping (flip chart)

- Observation: Standing beside a blank paper sheet, a team begins their Porter’s five forces analysis for the Australian television company. Team members debate their industry definition. A student says, “we could define it as the ‘television industry’ but I’m not sure.” The scribe picks up the marker to begin writing. “No, don’t write yet,” a student warns and resumes talking through her ideas.
- Through its permanent record-keeping property, the flip chart facilitated a reductionist approach to solving problems, because students could not change their ideas.

Form (whole vs segmented)

Whole form – one object (whiteboard)

- Observation: The team divide the whiteboard into left-side, center, and right-side columns... They split into subgroups. Group A discusses the company's tangible and intangible resources... Group B discusses capabilities... Reading the resources listed in the left column, Group B asks, “Could you add numbers beside your resources? It will be easier for us to bundle them together to guide our capabilities analysis.”... When the two groups are satisfied that the capabilities build upon resources in the left column, they work together at the right column to conduct the VRIN test for the first capability.
- Working on the single surface area of a whiteboard supported team members to work together and integrate their insights. Team members were able to see, notice, and connect different points of strategic analysis.

Segmented form – multiple charts (flipchart)

- Observation: A team spreads three sheets of paper across the wall to conduct the internal analysis of the case company. Group A works on analyzing resources on one sheet of paper, while Group B focuses on identifying capabilities on another sheet of paper. The students in each group stay fixated on their own task and look only at their designated sheet of paper.
- When teams worked with multiple sheets of paper, they undertook a more rigid division of labor in which there was minimal communication and collaboration

Sensation

- The whiteboards feel cold and smooth on the skin when touched
- Paper (of the flipcharts) feels rougher to touch, taking on the tactile quality of the walls on which the sheets are pasted
- Pens make continuous tapping sounds like machine guns when writing on whiteboards; they produce squeaky sounds on paper
- Whiteboards and paper create a variety of sensory stimuli, which individual students noticed to greater and lesser degrees

Conclusion

- Whiteboards and flip charts have different locations (static and mobile) that shape the agency students maintain over their embodied learning experience
- Whiteboards and flip charts have very different record-keeping affordances (temporary and permanent) that shape whether student teams engage with problems by expanding, or reducing their thinking respectively
- Whiteboards and flip charts have different forms (whole and segmented) that shape team member possibilities for thinking and taking action to build synergies across their understanding of distinct course concepts – or not
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Practical Implications

- Educators need to actively consider material objects within the 'how' of teaching – look at the ubiquitous material objects in classrooms as pedagogical tools that are available to be actively designed into team tasks to foster particular learning behaviors
- Whole-form objects and temporary record-keeping might help produce a psychologically safe environment for open discussion of thoughts and ideas
- The concrete experience of student learning is likely to be shaped by the ways in which mundane material objects encourage and discourage dialogue and reflection