Teaching and learning about early design sketching in architectural education: Towards a phenomenographic viewpoint

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Abstract: Sketching is a highly valued tool of thinking for architects particularly during the initial conceptual stages of the design process. Developing an effective design process is one of the key learning objectives facing an undergraduate architecture student. If we can improve the ways we teach students how to use early design sketching as a tool of thinking then we will better assist them in their aim to become competent practicing architects. The question is how to make these improvements?

This paper is intended as a conceptual framework within which the issues surrounding this question can be explored from a phenomenographic perspective on teaching and learning. The paper looks at the nature of early sketching, raises issues connected with its teaching and learning and identifies a phenomenographic study which has as its focus the identification and description of the variation in approaches to early sketching, the outcomes of which will help students to develop a deeper understanding of sketching and its usefulness. Further, by describing and analyzing the qualitatively different ways that students, teachers and practitioners experience learning about early sketching, insight would be gained into ways to improve the quality of student learning.

Keywords: early design sketching, design process, teaching and learning.

Identifying the question
Architects are specialists in designing buildings and understandably students look to their architecture degree as the place where they will learn how to design. Learning to design can be seen as having two aspects. Firstly, learning about what is being designed, that is the range of issues associated with the building: what it is made of, how it keeps the weather out, the character of the spaces and so on. Considerable teaching and learning emphasis is given to covering these sorts of issues. The second is learning how to design, that is the process or the way a designer progresses their architectural thinking from one thought to the next. Teaching and learning in this area is much less clear yet of no less importance.

An observed need for improvement in teaching and learning about how to progress a design is the motivation behind this paper. More particularly, the researcher’s experience in teaching design and drawing has led to the finding that teaching students how to use early design sketching as a tool of
thinking is helpful in their development of an effective design process, a key educational objective facing each undergraduate architectural student. This suggests that a useful question to ask is how can we assist students to improve their learning about sketching as a tool of thinking to progress the early stages of a design?

This paper looks at three areas surrounding this question; the nature of early sketching, teaching and learning issues associated with early sketching and a way of approaching improvements to teaching and learning. It presents a conceptual framework, informed by the researcher’s developing understanding of a phenomenographic outlook on teaching and learning (Marton and Booth 1997), underpinned by a background in architectural practice and teaching.

In teaching about architectural design a teacher is continually aware that different students think in different ways, teachers teach in different ways and the design process, whether emerging in the case of students or fully developed in the case of experienced practitioners, takes different forms for different people. This multi layered diversity gives rise to the frequently held view that design, essentially a creative and often personal process, is a difficult subject to both teach and learn. Yet perceiving the diversity of approaches to design and design thinking as a strength as opposed to a shortcoming, enables design to be experienced and understood by students and teachers as a rich and meaningful process, well suited to being crafted or shaped appropriately to the diverse conceptions, viewpoints and skill levels of the individuals involved. Giving value to different approaches or experiences of designing suggests that a phenomenographic perspective on learning, with its focus on describing and drawing meaning from the variation in ways of experiencing phenomenon, is an appropriate basis from which to explore the teaching and learning issues associated with early sketching and the design process. Marton and Booth explain that,

“Phenomenology aims to capture the richness of experience, the fullness of all the ways in which a person experiences and describes the phenomenon of interest.” (Marton and Booth 1997)

They further explain that one of the intentions of phenomenographic research is to depict this richness of experiences, mapping it out so that through a process of analysis, the different aspects that define or make up the phenomena being studied can be understood. With these aspects made apparent and being aware that at a general level, different people will deal with situations more capably or effectively than others, a useful question to ask is

“What are the critical aspects of ways of experiencing the world that make people able to handle it in more or less efficient ways?” (Marton and Booth 1997)

Relating this to the study of different approaches to early sketching, it would be beneficial for students to understand what it is about certain students’ approaches to sketching that enables them to develop a more effective design process? The phenomenographic perspective also appropriately gives emphasis to interpreting students’ and teachers’ perceptions of their own learning and teaching experiences and puts them at the center of efforts to improve learning and teaching (Prosser and Trigwell 1999), important if the students and teachers are going to identify with the findings.

The nature of early sketching

I am suggesting that skill in early sketching is helpful to the development of an effective design process and that sketching is an important tool of thinking for architects. It may be helpful at this point to look more closely at the connection between thinking and sketching, or using the more general term, thinking and drawing.
Sketching and thinking

Drawing for architects is a way of giving visual form to ideas. It is a way of thinking in visual terms and as such becomes a key means to progress the development of a design. Drawing and thinking are inseparable. If this is the case then learning to draw is closely related to learning to think. Glenn Murcutt illustrates this interconnectedness in an interview just after he was awarded the Pritzker Prize three years ago. When asked about the importance of drawing he replied,

“...when we lose the ability to draw, we lose a part of our ability to think.” (Glen Murcutt 2002)

In Figure 1. Joern Utzon may well be expressing a similar sentiment as he depicts himself with pen in hand dipping into his inkwell-like brain.

![Sketch by Joern Utzon](image)

Figure 1: Sketch by Joern Utzon  Source: (Utzon, J. 1982)

Early freehand design sketching, the focus of this paper, is one form of drawing. The sketches themselves with their typically creative and searching nature are suited to the initial conceptual stages of the design process. The process of sketching is a means by which a person is able to give expression to ideas, concepts, intentions, analogies, qualities or inspirations as well as being a tool with which each of these thoughts can be tested, questioned, developed and refined. The edge between the sketch itself and the thinking it prompts is blurred and for the purposes of this paper the term sketching will be used to describe both the actual drawing and the associated thinking.

Alvar Aalto offers us insight into his use of early sketching when he describes his process for designing the city library at Viipuri,
“...for long periods of time I pursued the solution with the help of primitive sketches. From some kind of fantastic mountain landscape with cliffs lit up by suns in different positions I gradually arrived at the concept for the library building...The childish sketches have only an indirect connection with the architectural conception, but they tied together the section and the plan with each other and created a kind of unity of horizontal and vertical structures.” (Alvar Aalto 1947)

The early conceptual stage of the design process, the stage Aalto is referring to, is both critical to the design process and hard for students to grasp – critical because it is where the seminal ideas and intentions that guide the design are laid down and tested and hard to grasp because students are trying to give expression to emerging thoughts and concepts in an attempt to give them a physical form. Most architects would agree that being creative is by no means easy and it follows that teaching students how to approach their design work in a creative way is similarly difficult.

Sketching as a skill

Sketching in the context of this paper can best be described as a skill, an ability developed through practice. It is a process of doing, where the act of putting down the lines cannot be separated from the thoughts that give rise to them and the thoughts they newly trigger. Seen as a skill it suggests that learning to sketch needs to be associated with practicing sketching, that is learning through doing. As with most skills there are teachable aspects that are beneficial for students to learn and, understandably, the more you do the better you become. This suggests that learning to use sketching effectively may take considerable time, well beyond the years at university.

Students, teachers and practitioners vary considerably in their level of skill but it would be reasonable to assume that the experienced practitioner would be better at sketching than the undergraduate student. Experience is only part of the issue though because to be good at sketching is not only a function of how well or proficiently a person puts down the lines or even how many sketches they do but rather how useful the sketches are in triggering new thinking. The implications of this for teaching and learning is that we need to not just understand sketching and sketches but we need to look more closely into what it is about certain sketching that lends it to being more useful in the progressing of design thinking. Insights into this would clearly be of significance to students.

Variation in sketching

Through practice architects have come to develop their own ways of sketching and their own associated ways of using sketching to progress their thinking. There is no commonly held approach or agreed method, rather there is considerable variation in how architects sketch. This variation is illustrated in the compilation of conceptual sketches by a group of eminent architects ranging across some fifty years (refer to Diagram 2).

This variation presents interesting opportunities for investigating teaching and learning from a phenomenographic viewpoint. How might such a variation best be observed and how might it be analysed? Clearly students and teachers would benefit if the nature of the variation in sketching could be made apparent. This would enable access to and reflection on the different ways architects use their sketching. Students can at present turn to books to look at examples of early sketches but these sources don't access the thinking process connected with the drawing.
Figure 2: Variation in early conceptual sketching  Source: see Reference - Architect (year)
If the variation in sketching could be documented, analysis could focus on identifying characteristic approaches to sketching and attempt to see if there is an association between certain approaches and usefulness and or level of skill. If the documentation were extended to include experiences of learning about sketching then the outcomes might offer insights as to how to set up better learning situations.

In summary it has been suggested that:-

- learning to sketch is associated with learning to think
- sketching is a skill, an ability developed through practice
- there is considerable variation in the way architectural practitioners, teachers and students understand and use early sketching
- experienced practitioners are likely to have a more thorough command of early sketching
- some sketching is more useful than others
- it would be beneficial to map out the nature of the sketching variation.

**Teaching + learning about sketching**

**Developing a characteristic design process**

As I have said earlier one of the most important learning objectives facing an architecture student is to develop their own characteristic design process or approach to design. As part of their ongoing development students are expected to shape and refine their approach informed by the understandings they have gained through the completion of individual design projects. This development is often perceived by students as being difficult, yet they are aware that students who appear to have a more effective design process, repeatedly produce designs of higher quality. Teachers need to keep this learning objective of the student in mind because it is too easy when teaching in the studio to focus on the architectural content of the design and overlook the need to assist the student in ways that they might progress the design, an indication that the teacher is not placing themselves in the situation of the student.

**Student centred learning**

If a teacher is to assist a student in developing their design process, that is focussing on both the content (what) of the design project and the way to move ahead (how), they need to work closely with the student placing them at the centre of the learning experience and be mindful of the reality that different students will think in different ways and that different students will need to be guided in different ways. To be effective in this guidance the design teachers need to be able to access what and how the student is thinking and reasoning throughout the unfolding design process.

Accessing students’ thinking is difficult and students are understandably unfamiliar with discussing their thought processes. This is where sketching is invaluable. If the teacher sees and works with the students’ sketches as windows into their creative thinking, they can then work with the student to devise ways to specifically assist them to progress through the design. Students are acutely aware as to if a design teacher has been helpful, as evidenced by a second year student commenting on their design teacher,

“…helps me learn about the process of design, invaluable. She is good at explaining things graphically which prompts me to draw more, which I think is good. She helps draw out key elements and clarifies them so that I can progress in my work with a more solid understanding.” (Anon. 2002)
A shift away from word-based thinking

Generally speaking students do not begin their architectural studies with the ability to think through drawing. It is not a skill that is given significance in school. As high achieving school graduates they begin their design studio learning with a keenness to talk about their ideas with seldom a shortage of words.

In order to begin to use sketching as a way of thinking, students have to shift away from word-based thinking and start by reaching out for a pencil to express their ideas. Experience and student feedback suggest that the teachers who draw alongside students, consciously or unconsciously modelling this sketching-based way of thinking are an important and appreciated learning source for students. One thoughtful second year student when asked to reflect upon a design studio he had just finished where the teacher placed deliberate emphasis on thinking through sketching commented,

“This studio has seen me realize more about the way that I design and the points about this method that can be improved in order to be a better designer and start to think through my drawings and draw through my thinking” (Stephen 2002)

In summary, it has been suggested that: -

• students need help to develop an effective design process
• learning how to design necessitates the student to be at the centre of learning
• students need help to learn how to use drawing as a tool of thinking.

Approaching teaching and learning improvements

Bringing together the issues raised about sketching and its associated teaching and learning with the methodologies offered by a phenomenographic research viewpoint we can identify a study which has as its focus the identification and description of the variation in approaches to early sketching, the outcomes of which might assist students to develop a deeper understanding of sketching and its usefulness. As the basis to this study, approaches to early sketching become the phenomenon under investigation and the variation in approaches to early sketching, the object.

Documenting the variation

Given that there is considerable variation in the way students, teachers and practitioners understand and use early sketching it should be possible to both observe and document this variation across the three groups with a view to representing a wide range of skill levels and approaches. As approaches to sketching are the phenomenon under investigation, the observations and documentation will need to take into account the act of sketching, the sketches themselves and the effectiveness of the sketching process. It is proposed that the most appropriate way to do this is to use a typical open-ended phenomenographic interview process centred around the interviewees sketching their progression through a short design task. Two components would arise from this type of interview, the actual sketches and a verbal report from the interviewee as to what they were communicating and how they used each sketch. It may prove more appropriate to use sketches from an already completed design, supported by an interview exploring the meaning and usage associated with each sketch. A pilot study and follow up discussions with other phenomenographic researchers would help to clarify this question. Marton and Booth (1997) describe the aims behind the research exchange,

“…the only route we have into the learner’s own experience is that experience itself as expressed in words or acts. We have to ask learners what their experiences are like, watch what they do, observe what they learn and what makes them learn, analyse what learning is for them.”
It is usual for phenomenographic analysis to deal with transcripts of interviews but in this case the sketches would be a key part of the data collection. Working out how to deal with the sketches will be a central part of the analysis process.

**Making sense of the variation**

The processes of phenomenographic analysis will be applied to identify and describe the qualitatively different approaches to sketching or categories of approaches (refer to Diagram 3). They will be described and organized to create a logical relationship between each category (A, B, C, D and E) and between each category and the whole or the collective approach.

**Collective approach**

![Figure 3: Hierarchy of categories of approaches](image)

The precise way of describing the categories will be determined by the researcher. Marton and Booth (1997) explain

*"The way in which we describe the variation reflects our, the researchers’ understanding of what differences are critically significant."*

Phenomenographic theory suggests that the categories can be further analysed and organized to form a scale or hierarchy with one end representing a partial, less complex or superficial approach, the other representing a more complete, more complex and deep approach.

With this hierarchy established a number of aspects and relationships may emerge and can be further explored. These include that:
there is a hierarchical relationship between the qualitative approaches, i.e. A is more simple than or less complete than B, B is more simple than or less complete than C and so on.

A, B, C, D and E together represent a collective approach, where the description of the whole variation becomes more significant than the parts.

the left hand end of the scale, likely to be associated with students, can be seen as lacking in certain ways, the right hand end likely to be associated with experienced practitioners, can be seen as desirable or more complete.

the hierarchy enables the critical differences between a superficial and a deep understanding to emerge.

Possible outcomes and benefits

As this research is in its early stages and the phenomenographic perspective requires that the data speak for itself, the outcomes are stated in broad terms, in a sense as a direction to aim towards. It is anticipated that the outcomes will relate to both students and teachers with the overall intention of giving insight as to how improvements can be made to the teaching and learning about early sketching. With the research outcomes arising directly from the students’ and teachers’ experiences it is hoped that they will be readily applied in the design studio or at the drawing board.

For the students it is hoped that the research provides a documented basis from which they can better understand what early sketching is, why it is useful and how different practitioners, teachers and students approach sketching. More particularly students might gain insight into what constitutes a deeper or more complex approach, enabling them to see the degree or shift needed if their own understanding is to become more closely aligned with the approaches of the highly skilled practitioners. John Bowden (2000) explains the relationship between this shift and learning when he says that,

“…learning occurs when students move from one level of understanding to another more complete one.”

At a much more simple level the research will expose the students to the reality that different architects sketch in different ways and what is important is not the actual sketch itself but how it is used to progress architectural thinking.

For design teachers, a better understanding of the variation in early design sketching across a range of skill levels will help them initiate improvements in teaching founded on the students’ perceptions of what does or does not work. Bowden (2000) explains this responsibility,

“The task for teachers is to discover students’ conceptions of the phenomenon under study and to devise ways of helping their students change their understandings.”

The research outcomes are expected to confirm the importance of teaching design from a student-centred viewpoint and that due emphasis be given to assisting students to learn how to progress a design.

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