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Citation: WELL-BOURNE, S., 1999. The routines and rituals of a design and technology classroom: an ethnographic study. IDATER 1999 Conference, Loughborough: Loughborough University

Additional Information:

- This is a conference paper.

Metadata Record: [https://dspace.lboro.ac.uk/2134/1410](https://dspace.lboro.ac.uk/2134/1410)

Publisher: © Loughborough University

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The routines and rituals of a design and technology classroom: an ethnographic study

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Abstract
This study outlines issues identified from an ethnographic study of an Australian secondary design and technology classroom. The aim of the study was to explore the features and characteristics of this classroom and examine how aspects of this micro-culture impact on teaching and learning. Of particular concern is discussion of an ethnographic methodology, and the subsequent product of that methodology, for examining and communicating aspects of design and technology culture.

An account of this design and technology classroom includes description and discussion of four significant aspects of this culture. The first examines the predominant masculine culture within this learning area. The second is the story of four girls and their perceived exclusion from right of passage into design and technology. Third is an account of the various perceptions of status in design and technology compared with the more traditionally liberal pursuits. The final point looks at the impact of the historical genesis of design and technology on this culture.

Implications of aspects of this culture are discussed, as is the benefit of commencing an ethnography of design and technology education. The paper highlights the need to address this culture in order to understand its impact on classroom life.

Key words: D&T, ethnography, culture, girls, boys, teaching and learning

Introduction
Design and technology as an emerging learning area has a unique heritage and genesis that continue to influence its development. The many features and characteristics that define it are largely unexplored yet integral to understanding the issues confronting it. This paper outlines the findings of an ethnographic study of a secondary design and technology classroom. The study examines four aspects of this culture and its implications for teaching and learning. Also addressed is how ethnography as both a research methodology and the customary product of that research is well placed to investigate and communicate this culture.

Ethnography
Ethnography literally means a picture of the ‘way of life’ of some identifiable group of people (Wolcott, 1988:186). Rather than answering questions or testing hypotheses, ethnography is concerned with raising questions and developing hypothesis through description and analysis of classroom life. It is concerned with discovering a little more of ‘who we are’ as a learning area, our distinguishing features and characteristics and the routines and rituals that dictate our classroom lives.

At the heart of ethnography is the allusive concept of culture, the broadest ethnographic concept. As diffuse a variable as this may be, it stands as the goal of ethnography to discern and describe it. In terms of the design and technology classroom, the culture of this group is made up of the concepts, beliefs and principles of action and organisation that can be successfully attributed to the members of this classroom (Wolcott, 1988:187). Developing a picture of this culture is about building the pieces and relationships of this micro culture in order to establish an account of the ‘way of life’ within this learning area.
The interaction of macro and micro cultural systems is a significant concept in terms of the classroom ethnography. As a cultural entity, the behaviours within this classroom take place against a backdrop of what it means to be both a teacher and a student within this setting. Distinct factors influencing these perceptions include the premises, interests, values and various positions on what constitutes worthwhile knowledge and learning. It is inevitable that these perceptions will be shaped within the larger social, cultural and political contexts (Burns, 1996:246).

Beyond the descriptive conventions of ethnography lies the paradigm of critical ethnography. It moves beyond the ‘what is’ of conventional descriptive ethnography to unfolding the meanings of why things are. Critical ethnography examines, questions and challenges the norms of culture. It proposes alternatives that participants may not even be aware of. It identifies those disadvantaged and alienated by the guiding elements of that culture. As Agar (1996:26) suggests, it is about asking why.

"What power, what interests wrap this world so tight that it feels like the natural order of things to its inhabitants? Are those inhabitants even aware of those interests, aware they have alternatives?"

In terms of the design and technology classroom, this study endeavoured, through the framework of critical ethnography, to explore the culture of this learning area and question the impact of internal and external forces on design and technology education. Because of the very process of human and social life that it claims to reveal, ethnography never can be more than partial and incomplete (Wolcott, 1985:197). The story (a secondary design and technology classroom) is specific and circumstantial; however, the aim is for its relevance in a broader context to be apparent.

The Story
I was given instructions on how to make my way to the department. This involved a long walk down past the gardeners' shed, towards an aging extraction hopper and around the back to a set of tall roller doors. Productive rows of machinery within gloomy workshops complemented the maze of extraction tubing that tangled throughout the building. Machines were painted in an industrial hammer green, reminiscent of the sixties. The floors were mostly concrete, with areas assigned for working with wood covered with ageing parquetry. The walls were sparsely decorated; some adorned with projects reflecting the tastes of past decades. The theme was clutter, like one of those antiquarian shops in which you feel you could perhaps find anything ever created.

Mr Pritchard is an ex boilermaker. As was the routine for what were considered non-academic students, he left school at fifteen to pursue an apprenticeship. After the apprenticeship he worked for five years on several industrial projects before his transition into teaching. The move was not unlike many trades teachers of this era, prompted by success with young apprentices under him, the demand for industrial arts teachers at the time and a desire to try something different.

This study was about the 'way of life' for the participants of this classroom. Mr Pritchard has twenty-two in this class, of which only four are girls. Although some schools have progressed considerably in terms of design and technology, this situation is not dissimilar to the majority of schools in this state. Whilst the thickness of data often associated with an ethnographic account is beyond the scope of this paper, the four predominant features of this culture are outlined.

Masculine Identities
This study identified, as the overarching component of design and technology, a dominant masculine culture. This dominance was manifested through the types of artefacts made, the environment in which they are made and the conceptions of technology that drive the curricula. For some time the term 'shed men' (a popular term often attributed to design and technology staff) has been used to validate this dominance and support the masculine conceptions of technology in education. Whilst derogatory, affectionate and at times self professed, the term 'shed men'
suggests an image that teachers, and those external to this world, attribute to this area.

Artefacts representing design and technology throughout this study were distinctly coded by gender. Participants appeared resigned to the historical and cultural exclusion of girls from design and technology through these artefacts. The focus of curricula was primarily directed towards the interests and tastes of the boys. The fact that pedagogy and curricula were so dramatically gender biased highlighted this dominant conception of technology.

The symbols and structures of the design and technology environment equally ascribed gender. Socially constructed yet powerful notions, these environments, as with Gleeson’s study (1994), were a definitive aspect of this culture. Aside from being an impediment to the inclusion of girls in design and technology, the environment constituted an element of security for the men functioning as practitioners within this area. Knowledge of and the ability to master this environment contributed significantly to the identity of its staff. Challenges to the status of the environment are viewed as a direct threat to that identity (Kenway, 1995).

Underpinning decisions on projects and construction of environments are masculine conceptions of technology. The environment depicts and supports these conceptions and stands to secure practitioners within them. As organising factors, artefacts, environments and conceptions of design and technology intertwine and support each other to maintain the historical position of this subject as being coded within gender.

The Four Girls
Over the period of my time with this class, a picture developed of the unique place of the four girls in the life of this classroom. Their story was in many respects consequential to the dominant masculine culture of this department. Their story highlights issues concerning perceptions of their technological competence, the strategies for surviving as the minority and the impact of society’s conceptions of technology on their place in the class.

The study highlighted a difference in the technological expectations of the boys compared with girls’. Throughout the term the girls remained significantly behind in terms of their progress in design and technology. Little was done to remedy this situation with both the girls and Mr Pritchard resigned to these differences. Attitudes of both the girls and Mr Pritchard reflected a perception that certain pursuits are gender specific. Constructed stereotypes were employed to account for differences in their performance.

"Boys have got more experience because they get into the old man’s shed."

The four girls accepted such notions and aligned themselves with stereotypes that marginalised them and restricted them from right of passage into design and technology education.

"It’s more for boys."
"Boys like making things more."

The story of the participation and experiences of these four girls was a significant aspect of the culture within this classroom. Analysis of their story invokes several questions pertaining to the issues addressed. Do the girls feel they warrant equal right of passage into design and technology? Do parents understand the benefits of the learning outcomes? Do teachers consider it as necessary for girls to achieve competency in these outcomes as it is for boys? How does the broader socio-cultural context shape perceptions of their involvement? The issues are complex; however, as a cultural entity the girls’ experiences in design and technology provide a greater understanding of the different roles prescribed by gender.

Status
A significant aspect of this culture was an ascribed status to design and technology, reflected in the various structures of the school. Perceptions concerning the place of design and technology within the ecology of the school are firmly established. As a cultural concept, perceptions of status are grounded
in a social, political and historical context. This context shapes perceptions, which in turn manifest themselves in the life of the school.

Social and geographical isolation was the most significant manifestation of these perceptions. Despite efforts to upgrade the status of technology, the legacy of traditionally liberal pursuits continues to impact on the place of design and technology within the school (Walsh, 1996). Its association with manual manipulation and utilitarian artefacts creates a divide with those subjects considered intellectual, a position that perpetuates cultural and social differences between learning areas. Students, teachers and forces external to the school shared perceptions of design and technology as marginal. The value ascribed to design and technology, particularly by parents and teachers from other learning areas, was significant in shaping the attitudes of students. Overall the status attributed to design and technology by various participants was a dominant factor in the culture of this classroom.

History
The strong affiliation with a ‘trades culture’ is a powerful historical element of design and technology teaching. Its impact is another element of this culture. This study recognised specific implications arising from an exclusive and often narrow conception of teaching and learning in design and technology. These conceptions, defined through strong connections with a trade background, are perceived as contrary to the emerging redefinition of design and technology. The result has been a distance from change and the continuing alienation of students who do not conform to current norms.

Many aspects of the traditional master/apprentice relationship contain pedagogy conflicting with that of a redefined design and technology. Defining elements such as a set body of knowledge and skills, a distinct order to the mentor/subversive relationship, a well defined structure for acquiring knowledge and skills and a profound sense of the ‘place’ of both apprentice and master within a prescribed industry - all are challenged through these emerging reforms.

Participants in this study who were external to, or challenged these conceptions, were generally not privy to success. As an element of this culture, the impact of a trades genesis participates in shaping the politics and pedagogy of this area. It is significant in terms of its impact on teaching and learning and its often adversarial approach to reform.

Implications
The potential of ethnography in educational research resides in its ability to be a meditative and reflexive vehicle (Sultana 1995:123). As a methodology, the work of description, analysis and reflection demands questions pertaining to the impact of this culture. For design and technology confronting the questions that this culture has for teaching and learning is part of that reflexive process.

The necessity of confronting the implications of this culture is increasingly relevant in light of current changes. Interpretation of elements within this culture contributes to an understanding of design and technology, its place within the school ecology, its perceived place within the broader community and the implications for teaching and learning.

The nature of this learning area, as expressed through the types of artefacts, the environment and conceptions of technology, was identified as distinctly masculine. An identification and affinity with what makes it masculine and a distance from aspects considered feminine, are characteristic of this culture. Its members acquire a certain competency with the routines and rituals that define it as masculine and few challenge it. There are significant implications from this distance. It maintains and perpetuates the masculine dominance of design and technology and, in doing so, excludes alternative conceptions of technology and isolates various potential participants from right of passage into its study.

The four girls were representative of those students isolated as a result of the classroom culture. This isolation was based on
judgements of their technological competence and internal and external expectations of their place within this learning area. They themselves recognised design and technology as "a boy subject" and conformed to beliefs about their technological competence. Both internal and external forces contributed to perceptions of their place in design and technology. Their position was defined by the notion that knowledge and skills in design and technology are coded by gender. The artefacts produced, the environment in which they are made and the conceptions of technology within the classroom all support this notion.

Various perceptions of the status and place of design and technology continue to influence the geographical, social and political distance between learning areas. The continuation of this distance has broad implications for both teachers and learners. Whilst maintaining this distance is an aim of those affronted and threatened by change, doing so limits the potential of design and technology to upgrade its status to an egalitarian position of equal value and dignity. This distance between learning areas on the basis of status impacts on participation and potential by students and teachers in the business of design and technology.

Summary

The aim of this study was quite simple, to know and understand more of the 'way of life' in design and technology. As a learning area challenged by the complexity of change and human experiences, analysing and interpreting this culture is of increasing relevance. The underlying, yet powerful, notion of culture within this learning area provides another avenue for understanding our experiences. Wolcott (1985:202) recommends more attention be given to classroom culture if we are to ever fathom how schools remain so remarkably the same, in spite of persistent and well intentioned efforts to change them. It has been the intention of this study to grant such attention to this culture; to examine its features and characteristics, the beliefs and values that define and maintain its curricular goals and explore the routines and rituals that characterise this 'way of life'.

References