Who are the stakeholders?

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The New Zealand technology curriculum requires children to solve problems to meet people's needs. So who are these people? Are they the users of the product, people who are affected by the product or someone else? This article investigates the confusion that exists in the New Zealand curriculum about the terms society, community, consumer, user, and people and justifies the replacement of some of these designations with the term stakeholder.

Introduction

Terms such as "society" and "community" are all encompassing. As these terms are used in the New Zealand curriculum this creates problems for teachers and students. It would be difficult if not impossible to consider or consult with every member of a community or society. Using the term stakeholder narrows the focus from the whole community to those people in the community who have an interest in what is occurring. This allows students to consider the appropriate groups and individuals that should become involved in the process. This ensures students question those affected rather than a few people they know will answer a survey.

In the current technology curriculum (Ministry of Education, 1995) the term stakeholder is never used but rather numerous alternatives are used interchangeably. In 2006 the Ministry of Education published a new national curriculum statement as a draft for trial and consultation (Ministry of Education, 2006b). This is a draft document, which asks for and expects feedback from practitioners and those involved in education in order to develop the final curriculum document. In this document the term stakeholder is used to replace the multitude of terms previously used. This will be the first time many teachers will have seen the term stakeholder used in education and yet at no time does this new curriculum define or explain the term.

This paper will outline the importance of considering others in all technological activities. It will highlight the confusion and limitations of current terms such as community, society, people, consumer, client and end-user. It will present a strong argument to ensure the multiple terms used in the earlier curriculum are now replaced with the word 'stakeholders' and a justification given as to why a clear explanation needs to be included within or alongside this new curriculum.

The New Zealand Curriculum (1995 version)

Technology involves people. It operates within, and has an effect on, society. "The technology curriculum aims to develop technological literacy… to enable students to participate fully in the technological society and economy in which they will live and work" (Ministry of Education, 1995 p.5). The curriculum leaves no doubt that technology should operate within the context of society as a whole "understanding the nature of the relationship between technology and society is vital to technological practice" (Ministry of Education, 1995 p.41).

While teachers are aware of this requirement of the curriculum it appears to be common practice to attempt to satisfy this by superficial attempts to use a survey, to be seen to be involving the community. Often children survey 'someone at home', possibly because this is easy but also perhaps because students and teachers are unaware of who the stakeholders actually are. Rarely does this consultation actually consider all the groups that may have an interest in the exercise. The curriculum document recognizes that a wide range of groups are affected by technological processes. Each of these groups has its own views about an issue or design. "Decisions about technological innovation are governed by this complex balance of factors, and groups or individuals may have markedly different attitudes towards technological practice" (Ministry of Education, 1995 p.41).

The curriculum also acknowledges that there needs to be a strong focus on understanding people and their needs. The importance of people is easy to ignore as "the characteristics of the people and the social and physical environment that gave rise to the developments are sometimes overlooked" (Ministry of Education, 1995 p.41).

Values

The curriculum also highlights the importance for students to "become aware of the diversity of valid ways in which different groups of people respond to technology and to innovation, and appreciate the impacts that technological changes have on different peoples" (Ministry of Education, 1995 p.7). Students need to be encouraged to identify the groups who will be affected and to find out how, and to what degree, this will occur. Students need to take this information into consideration when designing an appropriate solution. Students need to evaluate their product by considering its impact on society, both positive and negative from the perspectives of everyone involved (Burns, 1991). "Technological outcomes are judged in terms of their effectiveness, from different points of view" (Burns, 1991, p.23). It is important that students gain an understanding of the differing needs and values in humans (Mulberg, 1992). Technology is driven by values because of human needs and wants. People are different and therefore have diverse needs, causing cases where some groups may see a technological solution as good, and others may see it as an environmental or societal catastrophe (Stables, 1997). Students need to be aware that not every group will feel positive about the solution. Prime (1997), believes that it is critical for students to be equipped with the ability to recognize and handle these underlying values.

Confusion and subsequent questions

The curriculum often uses the words community, society and people interchangeably. Yet at no point are the terms explained. Did the writers wish to differentiate among these terms and if so do teachers possess the same understanding? Throughout the curriculum reference is also made to the needs of the consumers, markets, groups, individuals and users (Ministry of Education, 1995 p.9, 16, 36). Again these terms are not defined. The achievement objectives refer to the 'local community', 'wider community,' and singularly the term 'community', the distinction among these are also never given (Ministry of Education, 1995 p.88-90). Who are these communities and how do they differ from each other? When does a local community convert into a wider community?

An example of this ambiguity is when the curriculum states students "should recognize the importance of meeting consumer needs and being responsive to the community" (Ministry

of Education, 1995 p.36). At no point is the reader able to determine to whom the student needs to be responsive. Is it acceptable for a child who is making a personal alarm to consider himself or herself the consumer and therefore only meet their needs as long as they are responsive to the community? In this case could the community be the babysitter? What about others who have to see and hear the product? What about the parent/s who probably helped fund the product? Are the public who are slowly becoming de-sensitized to alarms seen in the guise of consumer or community?

Numerous people will be affected by the design, placement and use of the product but will they be considered? It must therefore be necessary to consider a wide range of views, rather than just consumers (Burns, 1997). The question of what and whose interests and purposes technology is intended to serve is a vital question at the heart of technological literacy (Jenkins, 1998). Students and teachers need to be encouraged to look broader than personal or family needs when devising solutions.

Strand C focuses on the inter-relationship between technology and society. Students focus on views, values, ethics, feelings, beliefs and factors which promote or constrain technological developments and which influence attitudes towards these technological developments. The achievement objectives are worded in such a way that any development can be investigated, not necessarily their own. For example, level 3 requires students to " identify and consider different views and feelings of people in relation to some specific technological developments or effects, such as fitness equipment, noise pollution" (Ministry of Education, 1995 p.88). It is only at level 5 that students are asked to concentrate on the implications of "their own technological activities" (Ministry of Education, 1995 p.43).

Children at present are therefore able to design and make a product with minimal consultation. If the term 'stakeholder' was used when referring to those involved with the product, the teacher and student would be encouraged to consider multiple views and perspectives.

The term stakeholder was not used in the 1995 New Zealand curriculum document (Ministry of Education, 1995). It is however a requirement of New Zealand's tertiary

standardized qualification, National Certificate of Educational Achievement (NCEA), that a year 11 student's design brief should include acknowledgment of all stakeholders, with the use of stakeholder statements, expressing beliefs, ethics, social position, concerns and needs. It is expected that students identify and consult with stakeholders who are directly or indirectly affected by their product. Students need to identify all legal and regulatory aspects of their design, such as, legislation, standards, codes of practice, codes of ethics and global and future technological trends. Students need to develop knowledge bases associated with their products or solutions (Douglas & McGregor, 2001). If the term is accepted as suitable and appropriate for senior students surely it is also appropriate for younger students. If teachers encouraged children to think more specifically of those who are affected rather than those who they can easily survey, students would achieve a product which clearly demonstrates fitness for purpose.

The New Zealand Curriculum (Draft for consultation 2006)

The "revision of the New Zealand Curriculum, currently in its draft form, had its beginnings with the Curriculum Stocktake, a comprehensive review of the current curriculum that was completed in 2002" (Fancy, 2006 p.1). The new curriculum is intended to emphasize "the importance of making stronger connections between what goes on in schools and the wider communities, society, and employers" (Fancy, 2006 p.1). The aim of technology in the new curriculum document is the same as the original document, that being for the "students to develop a broad technological literacy" (Ministry of Education, 2006b p.23). As stated previously the earlier document expected students to identify and consider the needs and views of the community, society, groups, individuals and an assortment of other terms. These generic terms have been eliminated in the new curriculum document, which refers to these people as 'stakeholders'. In the strand of Technological Practice students are required to identify, access and take into account stakeholder feedback. As this is now a critical part of the new technology curriculum it is vital that teachers and their students understand who this group includes.

Stakeholder

One could think the reason for the term stakeholder not being used in the 1995 curricu-

lum, may have been because it is a modern term. The term stakeholder however, has been used widely in business journals since the 1960's. At least seven articles which mention stakeholders in technology education are used in discussions prior to the publication of the New Zealand curriculum (1995). All of these articles however refer to the people who must be consulted when developing the technology curriculum rather than those people the children should consult when developing their solutions. If the term was being used at the curriculum development stage to identify those who should be consulted why was the term not used in the curriculum document?

The reason for this oversight may be due to the fact there currently is no single clear definition of who a stakeholder is, in fact 'there is a deep divide in definitions of what it is to be a stakeholder' (Kaler, 2002 p.92). Many people confuse the term stakeholder and shareholder. Although there may be only a difference of two letters between the terms, there is a considerable difference in who is being consulted and considered. In a survey of 28 definitions over a period of 1963 to 1995, it was found that there was more or less an even split between definitions which see stakeholders as people for whom businesses have to take responsibility and definitions which see them as people who have to be taken account of but not necessarily because of any responsibility for them (Mitchell, Agle, & Wood, 1997).

Volumes have been written about the definition and the importance of stakeholders (Henry, 2001, 2002; Kaler, 2003; Mongoven, 2003). Kaler states a starting point would be to assume that all stakeholders have something at stake in relation to the activities of the business (Kaler, 2002 p.93). If the reason for not continuing with the term was because of this plethora of terms maybe the student could identify which definition was appropriate for their project.
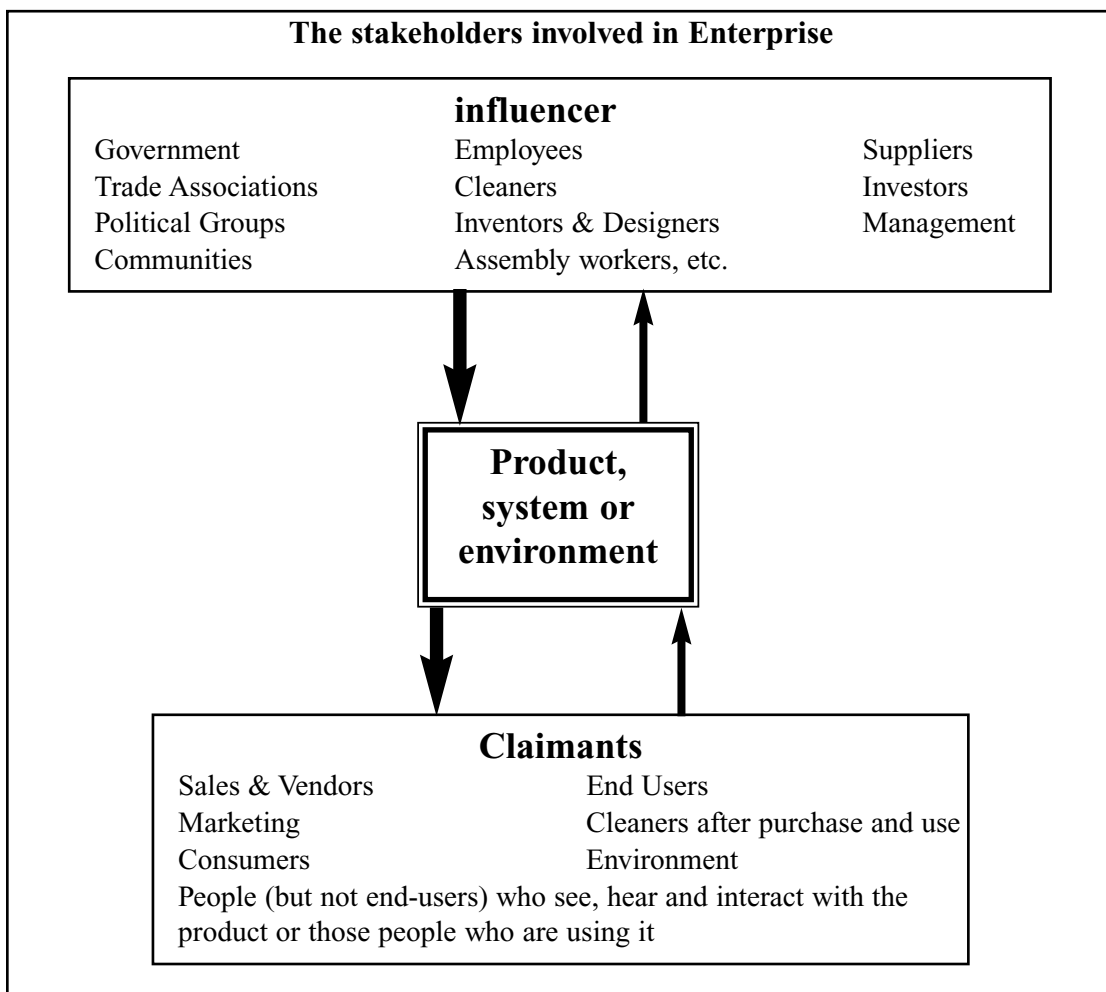
The articles and quotes citing stakeholder usually refer to businesses, firms and entrepreneurs. If it is important for businesses and entrepreneurs to consider others and the possible impact of these decisions (stakeholders and stakeholder theory), it could be argued that it is equally important to develop these skills in our current innovators and future entrepreneurs, thus preparing the students to be "the technological innovators of the future" (Ministry of Education, 1995 p.5).

Stakeholders include those who have some kind of claim on the services of the organization ("claimants") or those who can influence the workings of the business in some way, i.e., "influencer" (Mitchell, Agle, & Wood, 1997 p.859). Some stakeholders can be "affected by" as well as "affect" organizations (Kaler, 2002 p.93). The new curriculum expects children to "understand how society impacts on and is influenced by technology" (Ministry of Education, 2006a p.3).

Figure 1 demonstrates the numerous stakeholders, which may be involved in a classroom or school technological enterprise. Some of these stakeholders may be influencer who affect the development of the enterprise. Governments, trade associations and political groups all restrict worker practices and product designs. This is usually to ensure safety for the user or producer of the product, system or environment. These can form limitations or specifications for designs or the production process. The new

technology curriculum acknowledges the importance of "understanding and taking into account ethical considerations, legal requirements, protocols, the needs of and potential impacts on stakeholders, the development site, and where the outcome will be used" (Ministry of Education, 2006b p.23). If the students work as a company they may have designated roles or 'jobs' similar to an actual enterprise. People in these roles will influence the design of the process of manufacturing or the design of the product itself. The people making and assembling the product will have a large influence on the quality and hence success of the product. Pacey (1983) identifies many of these roles as part of the organizational and cultural aspects of technological practice. Communities' values and needs will influence the design of the product. The new curriculum requires children to develop an understanding of the "ways which individual and group beliefs, values and ethics can constrain or encourage technological development" (Ministry of

Figure 1. Stakeholders which may be involved in a school technological enterprise.

The stakeholders involved in Enterprise

influencer

Government	Employees	Suppliers
Trade Associations	Cleaners	Investors
Political Groups	Inventors & Designers	Management
Communities	Assembly workers, etc.	

Product, system or environment

Claimants

Sales & Vendors	End Users
Marketing	Cleaners after purchase and use
Consumers	Environment

People (but not end-users) who see, hear and interact with the product or those people who are using it

Education, 2006b, p.23). The inventors and designers have invested a great deal of time and energy into the conceptual stage of the product. They often have an idea of how the finished product is to look and function. This at times can be at odds with those producing and selling the product. Suppliers of materials, tools, equipment and services can affect the product. In a classroom, the manufacturing process may need to be altered to take account of cleaners' and school timetabling requirements. The management (principal and governing body) of a school will have set ideas about how a product, system or environment, which represents their school, should look and behave. Lastly parents or those paying for the product to be developed will often have expectations of and for the product. If these people do not understand that the philosophy of the curriculum is no longer based on creating identical technically correct products, in order to gain set skills, but rather to learn through a process which encourages diversity and risk taking, then conflict can arise. These influencer have a large impact on the design and manufacture of the product, system or environment but may also be influenced themselves (usually to a lesser extent) by its success or failure.

Other stakeholders involved in a school enterprise may be claimants who are affected by the product or its use. The design of the product will affect those who sell and buy the product but also those who have to promote it. Those people who have to see, hear or interact with the product will also be affected. For example a child who designs an alarm for their bedroom will affect the whole household even though they are not the persons directly using the alarm, or the child who designs a T-shirt is not the person who has to read or look at it. These people are affected by the product, even though they have not purchased it nor are they the direct users of it. The environment may be affected by the packaging and use of the product. Designs where packaging or part of the product is discarded after use, e.g., ice-block sticks can greatly alter the environment and may add considerably to a cleaner's job. These claimant stakeholders are affected by the product or its use and they in turn may affect the product or its manufacturing process in some way but this is usually to a lesser extent.

Students need to critically reflect on their own practice. In order to develop 'technological integrity' (Pretzer, 1997), students must gain a

deeper understanding of the nature of technology when they consider beliefs, ethics and values of all stakeholders as well as social, cultural and environmental implications (Compton & Harwood, 2003).

The Stakeholder Theory

Most articles using the term 'stakeholder' appear in business or ethics journals. So who are these stakeholders and "what is the appropriate balance between shareholders and other stakeholders?" (Elkington, 2004 p. 6). Unfortunately the stakeholder theory has had its greatest influence on theorists and academics rather than practitioners, yet the challenges of the current environment are making the stakeholder perspective more relevant than ever for the practicing entrepreneur (McVea & Freeman, 2005, p.59). Stakeholder theory offers a "unique and neglected contribution to decision-making processes, particularly in innovative and entrepreneurial fields" (McVea & Freeman, 2005, p.59).

Mitchell, et al. (1997) believe it is important to identify issues of "legitimacy" and "power" of the stakeholders (claimants and or influencer) but also the urgency of their claim and/or influence (p. 865-868). If claimants who are recognized stakeholders influence those affected by and those who affect the organization, then there will be times when their views are conflicting. "We should make students aware that conflicts of interests exist" (Hodson & Farmer, 1992) and that conflict in what is considered the best solution will most likely occur in every technological context (Mulberg, 1992). It is important that stakeholders are consulted throughout the whole of the technological process.

The managerial stakeholder theory, ethical managerial stakeholder theory and stakeholder-agency theory are just a few versions of the debate over who has the right to have a say in the decision making and whose rights take precedence (Freeman, 1984). This is a debate that could and should be taken up by children. Who do they have to consider when they design a new product? Do they have to consider the people influenced during the manufacturing process (cleaners, classmates, teachers, etc.), those who pay for the product (investors/parents), those who use the product (end-users), those who have to see, hear and deal with the consequences of the product although they may not directly use it themselves, to name a few examples. We need to consider who is

benefiting and at whose expense (Prime, 1997). If we do not consider negative consequences "we make the value statement that progress must be made at any cost and that financial gain is the major factor to be considered in technological advancement" (Prime, 1997, p.31).

Part of a technological activity should be to determine who is going to be affected and how the views of these people are going to be obtained. It may not always be possible to obtain these views, but being aware that all actions affect others is an important part of being a valued member of society.

Conclusion

The term stakeholder should be used in the new New Zealand technology curriculum. Teachers and/or students will need to determine who the stakeholders are and whether it is feasible or appropriate to canvas their views. In effect they would need to develop their own stakeholder theory. This process could be as simple or as complex as the teacher feels appropriate. It should be seen as a vital part of the technological process. The term 'stakeholder' eliminates confusion over the multitude of terms currently in use such as consumer, community, society, user, client, and people and helps to ensure consultation isn't trivialized but rather is a key part of the process. There appears to be a lot at stake if this term isn't understood or included in classroom practice.

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