School Pupils' Perceptions of Information Channel Credibility

by

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DECLARATION

I, Owen Buchanan declare that the dissertation, *School Pupils' Perceptions of Information Channel Credibility*, which I hereby submit for the degree **PhD Information Science** at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

I have obtained the applicable research ethics approval and complied with the University of Pretoria's Policy on Research Ethics and Integrity and have in general observed the principles of honesty and objectivity, as well as the duty of care and fairness in giving credit and appropriate acknowledgement to the work of others.

KO Buchanan 20 August 2016

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ABSTRACT

High school pupils operate in a macro (country-specific), meso (school-specific) and micro (personal) context and their information needs are always experienced in a context - sometimes as imposed school assignments or else self-generated, e.g. as everyday life information needs. Pupils source their information through various information channels and there is sometimes a perceived risk to acting on incorrect information. Compared to adults in information-intensive professions, researchers have found that pupils tend to be unconcerned about the credibility of information. Based on a literature survey, a trust model was compiled from a number of other models and adapted to serve as an information channel credibility model portraying the pupil in context with his/her perception of information channel credibility. The model was used as a framework for a study on high school pupils' perceptions of information channel credibility and factors influencing their perceptions.

The study was guided by the following research problem:

> *How can school pupils' perceptions of information channel credibility inform school-based interventions?*

In order to find answers, the following sub-questions were addressed:

- What has been reported on perceptions of information credibility and information channel credibility, with specific reference to school pupils, students and adults, as well as professionals in information-intensive environments?
- How can trust models guide a study of pupils' perceptions of information channel credibility?
- What factors influence school pupils' perceptions of information channel credibility?
- What school-based interventions could be recommended to address the shortcomings in the perceptions of pupils that can prepare them to meet the information requirements of adulthood?

A self-administered print questionnaire was used in May 2015 to survey the perceptions of 548 South African high school pupils from three different schools covering the range of the socio-economic spectrum from wealthy through to pupils from poor, unemployed home environments. The study was conducted with grade 8

and grade 12 pupils (entry and exit grades for South African high schools) from a city in the Mpumalanga province of South Africa. Semi-structured interviews were conducted with the principals of the three schools. The results are reported as descriptive statistics supported with inferential statistics and qualitative analysis where relevant.

The findings are that pupils' perceptions of information channel credibility are affected by the perceived risk of acting on incorrect information, their previous experience and the context (i.e. type of information need, whether the need is imposed or self-generated and pupil demographics) in which the information need occurs. Pupils used a level of metacognition with regard to information channel credibility. The model proved useful to guide data collection that can guide school-based interventions. It holds potential to be further adapted to actually reflect school-based interventions.

School-based interventions are suggested to encourage responsible assessment of information channel credibility, including the simulation of risk by means of mark allocation for metacognition about information channel credibility, intentional exposure of pupils to a wide range of information needs and exposure to highly credible as well as less credible information channels.

Key words: high school pupils; information channels; information credibility; risk perceptions; school contexts; school-based interventions; South Africa; trust models

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LIST OF ABREVIATIONS

AIDS	Acquired immune deficiency syndrome
e-commerce	Electronic commerce
email	Electronic mail
ELIS	Every-day life information seeking
ELM	Elaboration Likelihood Model
IMDb	International Movie Database
IT	Information technology
RNCS	Revised National Curriculum Statement
RSA	Republic of South Africa
t-Test	Student's t-test
TB	Tuberculosis
TV	Television
UK	United Kingdom
USA	United States of America

CHAPTER 1

INTRODUCTION AND OVERVIEW OF THE RESEARCH PROJECT

1.1 RATIONALE FOR THE STUDY

With the world-wide increase in availability of internet bandwidth, there has been a similar increase in online information resources available to school pupils, particularly in developed countries (Bowler[1], 2010a; Giovannini *et al*., 2015; Huvila, 2013; Mayer *et al*., 2011; Sánchez-Franco & Roldán, 2015). Aligned with this, online resources are seen as one of the solutions to under-resourced schools in developing countries, as is evidenced by the money and effort being invested in initiatives such as the One Laptop Per Child project, the work of SchoolNetAfrica's campaign for One Million Computers for Youth and the Telkom project to provide 2010 schools with connectivity by the year 2010.

Information behaviour of adolescent pupils has changed. Before the availability of the internet, pupils researching a topic would consult library books, teachers, textbooks, peers or even experts (Flanagin & Metzger, 2008). Now pupils who have access to the internet, when researching a topic, generally tend to favour the internet (Behrends, 2012; Herring, 1999; Khoo, 2014; Madden, Ford & Miller, 2007; Shenton & Johnson, 2007). This favouring suggests a need for further investigation of pupils' perceptions of the trustworthiness of information sources and information channels and how to improve their research at school level.

Johnson and Case (2012:32-33) distinguishes between an information source and a channel. The former refers to the creator of the information, while the latter is the medium through which that information is accessed, i.e. the vehicle through which a message is delivered. This study will focus on the information channel, as this is the actual interface with which the pupil is interacting. (In the questionnaire [Appendix A] for the high school pupils the term "source" will, however, be used to avoid burdening them with technical terminology.) The study developed over several years from 2008 to 2016. References thus cover older sources as well as studies reported closer to the period of completion.

[1] In-text references are presented in alphabetical order according to author

Every channel through which information is accessed, including library books, teachers, textbooks, peers, experts and the internet, contains information that lies on a continuum from trustworthy to very unreliable. Research, however, indicates that it seems as if adolescents do not assess the trustworthiness of internet (or printed) information. They automatically assume it to be trustworthy (Finley & Watmire, 2012; Francke & Sundin, 2012). This is not to say they are unable to assess the credibility of information, as when they are actually asked to do it pupils can generally do it (Agosto, 2002; Hirsh, 1999; Kafai & Bates, 1997).

South African school curricula, Curriculum 2005 and its successor, the Revised National Curriculum Statement (RNCS), envisage a learner who can "effectively use a variety of ways to gather, analyse, organise and evaluate numerical and non-numerical information." Misplaced trust in information for an imposed task (typical school project) might cost "marks", but in a self-generated information search (real life information need) the consequences are potentially much more serious. Thus it is important to understand pupils' perceptions of the trustworthiness of information channels and hence what appropriate intervention(s) might be necessary to develop pupils' research skills at school level. If effective research methods are learned at school level, this might further enhance the establishment of a culture of lifelong learning (Carchiolo, Longheu & Malgeri, 2010; Savolainen, 2008) as envisaged in the RNCS of South Africa.

1.2 BRIEF LITERATURE REVIEW

A number of studies have reported on the credibility (or perceptions of trustworthiness) of information being sought by both adults and pupils and these are discussed briefly in Sections 1.2.1 – 1.2.4. An important factor to bear in mind is that all such studies have taken place at a particular point in time relative to a very rapidly changing internet environment. Not only is the number of web sites increasing exponentially, but the number of users with access to the internet is increasing, as is the bandwidth over which it is accessed (Bowler, 2010a; Holtgrafe & Zentes, 2012; Huvila, 2013; Julien, 1999; Khoo, 2014; Robertson-Lang, Major & Hemming, 2011; Sánchez-Franco & Roldán, 2015; Shah *et al.*, 2015). All of this points to an ever changing population, which is being sampled in every new study. By the same token, the underlying population is changing in that the longer the internet is in existence, the more experienced people are becoming in internet information seeking (Robertson-Lang, Major & Hemming, 2011). There are also studies outside the field of information behaviour, such as studies on trust and education, that might help to deepen understanding of perceptions of information channel credibility. These are discussed in Chapter 2.

The literature analysis for this brief review started with the *Annual Review of Information Science and Technology* for 2006 and 2007. Specifically Marsh and Dibben's (2003) chapter on trust, Case's (2006) chapter on information behaviour and then Courtright's (2007) chapter on context were used as the sources around which to structure a framework for studying perceptions of information channel credibility for this study. Further research was carried out based on bibliographies of relevant journal articles and other publications. Apart from initial searches, databases were periodically consulted for the latest publications relevant to the study (Computer and Information Systems Abstracts; ERIC; Library and Information Science Abstracts; Library and Information Science Source; Academic Search Complete Library; Library, Information Science and Technology Abstracts; Science Direct; and Thomson Reuters Web of Science).

1.2.1 Trust models

Several trust models were noted before making a decision for this study: Levin, Whitener and Cross (2006), Kostagiolas *et al*. (2014), Lucassen and Schraagen (2012), Marsh and Dibben (2003), Mayer, Davis and Schoeman (1995), as well as note being taken of the many computerised trust models used in e-commerce. Trust models relevant to this study will be explained in more detail in Chapter 2.

The models referred to below are specifically designed to explain trust, but once broken down into their components, will be suitable for use to support better understanding of the information behaviour of pupils regarding their perceptions of trust or credibility. The models reflected here were identified at an early stage of the study (2008 – 2012).

The trust model proposed by Mayer, Davis and Schoorman (1995: 712) is useful to underpin the study of perceptions of the trustworthiness of information channels. They found that a large proportion of trust can be ascribed to

- the ability of the trustee,
- the perception of the trustee being positively orientated to the trustor,
- the perception of the integrity of the trustee.

Levin, Whitener and Cross (2006), looking at trust from the perspective of Psychology research, explain that trust (between individuals particularly) is based primarily on:

- similar demographics,
- trustworthy behaviour,
- a shared perspective.

They also note that as the length of association between individuals increases, the trust conditions progress down the list. In the context of this study this could indicate that the longer pupils have used an information channel, the more likely they would be to perceive it to be the work of a trustworthy person or a person who shares a common purpose with them.

Marsh and Dibben (2003) divide trust into three layers:

- Dispositional trust – "the psychological disposition or personality trait ... to be trusting or not"
- Learned trust – "general tendency to trust, or not to trust as a result of experience"
- Situational trust – "basic tendencies are adjusted in response to situational clues".

All three of these layers are of significance to this study:

- Dispositional trust will be measured when averaging perceptions across all contexts.
- Situational trust will be the focus when analysing different responses in controlled contexts.
- Learned trust will be the focus of recommendations for school-based interventions resulting from an understanding of the influencing credibility perceptions.

While these models were not originally derived to address the subject of trustworthiness of information, they provide a useful framework on which to base a study of the information behaviour of school pupils. These models will be dealt with in greater detail in Chapter 2 before exploring the preferred model (Figure 4.3) in more detail in Section 4.2.

1.2.2 Studies on information behaviour of young people

Flanagin and Metzger (2008) describe children born roughly in the 1980s and beyond as "digital natives." They are immersed in the world of technology and more likely to turn to technology for answers than their elders. South Africa is in the position that there is a continuum of high school pupils from the "digital natives" through to those who are not yet immersed in technology. The studies discussed below are a few of those reporting on the information behaviour of young people (from the developed world) that may shed light on perceptions of credibility and highlight issues that need to be addressed when considering possible intervention strategies in schools in developing countries to foster effective approaches to information seeking.

Walraven, Brand-Gruwel and Boshuizen (2009) studied the information seeking behaviour of a group of Dutch 14-year-olds. They specifically focused on how the pupils evaluated the

information and the information sources on the internet. They found that the credibility of information was only evaluated 15% of the time, while the credibility of the source was only questioned 0.5% of the time. However, when interviewing the pupils after the survey, the researchers found them to have views on how information credibility should be formally evaluated. The one area where they found that pupils did evaluate information was as to whether it was relevant to the task set rather than whether the information itself was credible. Pupils occasionally did take notice of whether the information was contained on more than one site, which they interpreted as meaning it was more credible.

Agosto (2002) asked a group of girls to evaluate certain web sites. The study pointed to the use of superficial criteria such as colour, excitement and quantity of information, without any reference to trustworthiness. Madden, Ford and Miller's study (2007) found pupils' evaluation of information sources[2] was based on perceived usefulness to their task rather than trustworthiness. Sundin and Francke (2009) found that the wide diversity of resources required that pupils assess credibility for the particular situation in which they used the information.

In Alexandersson and Limberg's (2003) study of young people they found an emphasis on transferring information rather than transforming it (a tendency to cut and paste). They also reported avoidance of resources held in the school library and a preoccupation with the "right" procedure to locate sufficient facts rather than the trustworthiness of those facts.

Hultgren and Limberg (2003) point out that poorly designed assignments can lead to uncritical acceptance of information sources by pupils. They also highlight the effect of limited reading ability hampering the information behaviour of adolescents. This relates to Cooper's (2002) study of 7-year-olds who are still learning to read. She found similarity to the behaviour of older pupils in other studies in that they preferred browsing for information rather that conducting analytical searches, as well as a tendency towards reliance on visual information.

Shenton and Dixon (2004) observed that pupils seemed ignorant of the possibility that information they used might be untrustworthy. Good information sources were judged on quantity or provision of the necessary information. In their paper the previous year they

[2] In this study the term information channel is used to indicate the means through which information is accessed. The term source is used to specify the actual originator of the information. This differentiation is not necessarily used by authors cited and thus in the interests of consistency this study will not necessarily use the term used by the cited author(s).

(Shenton & Dixon, 2003) found that the predominant information source used by pupils in their study was other people. In the case of school-related searches, this was often the first step, as pupils used people (generally adults such as parents, relatives and teachers) to provide answers or pre-sift their needs and point them in the direction of more suitable information channels. Madden, Ford and Miller (2007) found pupils' use of other people as information sources diminishing as they got older. Case (2012:232) noted that generally people preferred getting information from people irrespective of the quality of the information, which was corroborated by Agosto and Hughes-Hassell (2005) and Gross and Latham (2009). The trend in preference for people as sources of information is overshadowed by the internet in more recent studies (Biddix, Chung & Park, 2011; Holtgrafe & Zentes, 2012; Metzger & Flanagin, 2013). Duffy, Liying and Ong (2010) found that teenagers in a study in Singapore preferred online media for entertainment and leisure information where accuracy and reliability were not perceived as important, whereas for current affairs off-line sources were regarded as being more reliable. Lubetkin *et al*. (2015) found that the more limited people's health knowledge, the greater their reliance on interpersonal information channels for health information.

Mnubi-Mchombu and Ocholla (2014) researched the information needs of orphans and vulnerable children in Namibia. Their information channels included radio, friends, teachers, relatives and occasionally newspapers.

These few studies of young people's information behaviour point to awareness in research of pupils' lack of concern about the trustworthiness of their information sources, but yet there are few efforts to understand why they do not consider trustworthiness, how their perceptions of trustworthiness can be studied and how these can be used in interventions to improve pupils' research at school level. This was true in the early stages of the planning of this study and although more studies have been reported in the last few years (Finley & Watmire, 2012; Francke & Sundin, 2012; Gasser *et al.,* 2012; Subramaniam *et al.*, 2015) there is still a need for studies of pupils' information channel credibility perceptions, especially as contexts of pupils and contexts from which information is sourced are developing so fast.

1.2.3 Studies on information behaviour of adults

The following is a selection of studies on adult information behaviour with specific interest in the perceptions of the trustworthiness of information channels. This will lead to a discussion of the similarities and differences between adult and youth perceptions. A better

understanding of how adults and youth consider the credibility of information channels and how such studies were conducted can help to offer insight in how to consider intervention opportunities regarding pupils' information behaviour in a school context.

Consumer Web Watch did a survey of what consumers rated as essential for the credibility of a web site (Stanford *et al.,* 2002). The most important criterion stated was a privacy policy. However, when Fogg *et al.* (2001) surveyed the actual behaviour of consumers on live web sites they found the privacy policy was totally ignored in favour of visual cues in assessing a site's credibility. In a parallel survey also carried out in Fogg *et al.*'s study they used experts to assess the same sites and found the experts were much more concerned about the quality of the actual information. Kim, Park and Bozeman (2011) also compared students' assessment of online medical information with that of experts and found significant discrepancies; this is corroborated by the work of Gross and Latham (2009), Hovick, Liang and Kahlor (2014b), Johnson and Kaye (2013) and Kammerer and Gerjets (2014). Rains and Karmikel (2009) studied the factors influencing credibility perceptions of web sites. They found positive effects of structural components as well as message characteristics.

Allen and Wilson (2003) studied the information overload of managers in three information-intensive business organisations. They found managers complaining about the quality of information, particularly in the context of job security and risk avoidance. Case (2012:311) refers to studies of managers reaching opposite conclusions; some of these studies found that the accessibility of information was the most important factor for the managers, while other studies found that the reliability of the information was more important. Rowley and Johnson (2013) researched how users establish the trustworthiness of digital information and found that this included triangulation with own experience. Thornley *et al.* (2015) found that researchers use the usefulness of the intellectual content to make credibility decisions, but also use their own position in networks of trusted social and research influence.

Bruce *et al.* (2003) studied the collaborative information retrieval behaviour of a Microsoft design engineer's team and found the general notion was that the best way to obtain information was to ask the right person or to know someone who knows the right person. Hertzum *et al.* (2002) found software engineers used known information sources or else were very cautious.

Hirsh and Dinkelacker (2004) surveyed the research departments of Hewlett Packard and Compaq and found heavy reliance on internet sources. Choice of information channel was based on the time it took to find the information as well as the authoritativeness of the

sources. An interesting observation was the additional reliance on colleagues outside the company for information. Huvila (2013) also looked at the relationship between credibility and ease of accessibility of information.

Julien and Michaels (2002) carried out a case study on one particular individual's information behaviour, specifically pertaining to his everyday life. The types of information channels consulted by the individual were people, print and electronic sources. There was a difference in information channel selection based on whether the information need was personal or work-related. Work-related needs tended to be factual and he spent less time searching than on the personal needs, which tended to lead to decision making.

The two-step flow model of information presented by Case *et al.* (2004) involves asking an expert and they studied how this had changed with the advent of the internet to a direct method of personally finding information. The change from consulting people to accessing the information directly from the internet in their particular research (medical – cancer genetics) is of concern because of the potential for misinformation and misunderstanding. They found that the internet was perceived as being more authoritative than interpersonal connections. This was confirmed by Holtgrafe and Zentes (2012), who noted that increased access to more useful and credible online information on non-prescription drugs had resulted in a move away from traditional pharmacies to online purchasing channels. Henshell (2015) has noted that information consumers are now relying on online reviews to establish the credibility of their information but this has an added problem of the reviews themselves being sponsored in various ways.

Lankes (2008) in his research paper found a shift from getting information from an authority to information self-sufficiency where users seek commonality among multiple information sources. Lee, Ayers and Holden (2014) found pregnant women with high risk conditions use more sources of information than others. These findings concur with Case *et al.*'s (2004) report on the change from the two-step flow of information (asking an expert) to the direct method of gathering information. Similarly Behrends (2012) noted the move away from the library as a source of information to an almost exclusive use of internet search engines in information tasks.

Flanagin and Metzger (2000) surveyed adults (mostly undergraduate students), comparing their perceptions on the credibility of information from newspapers, magazines, television, radio and the internet. They found that the perceptions differed depending on the types of information sought and thus they used news, resources, entertainment and commercial

information across the five media types. They found few significant differences except that generally newspapers were perceived to be more credible than the other media types and that respondents were generally most sceptical of commercial information. In their comparison of internet users and non-internet users, they found no difference in their perceptions of the credibility of information in newspapers, radio, television, magazines or the internet. Gasser *et al*. (2012) also found both contextual and demographic effects on pupils' evaluation of information. Huvila (2013) found the authority of information to be situational. Similarly Knobloch-Westerwick *et al*. (2015) looked at interaction between topics, participants' stance on an issue and source credibility. Savolainen (2004) looked at the effect of participants' attitude to the internet, categorising them as enthusiastic, realistic and critical.

Marton's (2003) study of people looking for health information found that perceptions of the reliability and relevance of internet information were dependent on the demographics of the seeker. Canadian women were frustrated by the lack of local information as opposed to the information on sites from the United States (US). She did find that web sites were not perceived to be as reliable as physicians and books.

Savolainen and Kari (2004) studied everyday information searches and got the participants to prioritise information sources for relevance to the participants' needs. They found source preference for individuals to be limited to a few familiar sources, while noting them to be based on accessibility and quality. Kim (2010) found that information seekers evaluated message credibility more often than source credibility. Johnson and Kaye (2013) proposed that perceptions of the credibility of certain sources leads to selective exposure and selective avoidance. They tested this theory against political followers and did not find evidence of avoidance but participants searched for information that both supported and challenged their perceptions. Biddix, Chung and Park (2011) analysed participants' perceptions of the importance of information credibility versus convenience. Savolainen's (2007a) study involving environmental activists highlighted content of information, availability and accessibility as source preferences for orienting information.

1.2.4 Discussion of similarities and differences

One of the recurring findings of the studies referred to in the preceding sections was that the choice of a web site was often based on easy access and time efficiency for both youth and adults. Trustworthiness of the web site was seldom mentioned. This predisposition to the easiest option might perhaps indicate that studies in this field should pay more attention to analysing the actual purpose for which the information is being sought. For instance, while

academic research might need multiple referenced viewpoints of a concept, a business decision might sometimes just require sufficient information to make the correct decision, while a high school project might need just enough to satisfy the teacher's marking rubric for the desired mark. Lack of attention to the purpose of the information need is ignoring the context of the information need. In the Mayer, Davis and Schoorman (1995: 712) trust model, the context envelops and interacts with all the other components of the trust model. Information being searched for has a context, which is not always sufficiently acknowledged in the studies on information behaviour regarding the credibility of information and trust of information sources.

Another finding was that, in both adults and pupils, what they said was important about trustworthiness did not correlate with their search behaviour (Agosto, 2002; Biddix, Chung & Park, 2011; Fogg *et al.,* 2001; Walraven, Brand-Gruwel & Boshuizen, 2009; Westerwick, Kleinman & Knobloch-Westerwick, 2013). Applying this to the Mayer, Davis and Schoorman (1995: 712) trust model, it might indicate that the participants in the studies understood the requirements for trustworthiness but their perception of the risk involved was not sufficient to necessitate modified behaviour. Instead of the discrepancy between stated standards and information behaviour being seen as perplexing, it should rather be seen as a component of the trust relationship that requires further investigation and hence this will be addressed in the empirical part of this study.

Study of information behaviour is made more complicated as a result of the dichotomy caused by the occurrence of both self-generated tasks (seeking information for one's own interest) as well as imposed tasks (finding information asked for by the teacher or one's boss) (Gross, 1999). These categories match those used by Kostagiolas *et al*. (2014); work-related factors (e.g., need for compliance) or personal motivation (e.g., need for self-improvement). Adults doing work-related research tended to place more emphasis on the trustworthiness of their sources while relying more on their intuition when researching for self-initiated personal information (Gross, 1999; Hertzum *et al*., 2002; Kostagiolas *et al*., 2014). Pupils, on the other hand, tended to disregard the trustworthiness of their sources for school work (Agosto, 2002; Finley & Watmire, 2012; Francke & Sundin, 2012; Shenton & Dixon; 2004; Walraven, Brand-Gruwel & Boshuizen, 2009). The Elaboration Likelihood Model (Petty & Cacioppo, 1986) is useful in attempting to understand the differences in information seeking between self-generated tasks as opposed to imposed tasks. Unless strongly motivated, people rely on peripheral cues for making assessments of credibility.

There appears to be a limited number of studies on pupils' information seeking behaviour outside of school, compared to adults. There are, however, some studies of every-day life information seeking (ELIS) among youth (Agosto & Hughes-Hassell, 2005; Dangwal & Gupta, 2012; Duffy, Liying & Ong, 2010; Fisher & Julien, 2009; Gasser *et al.*, 2012; Notley *et al*., 2012; Subramaniam *et al.*, 2015).

Findings in the information behaviour field link up with studies in other fields such as education, computers, mathematics and psychology (Agudo, Fernández-Gago & Lopez, 2009; Levin, Whitener & Cross, 2006; Marsh, 1994; Wang & Vassileva, 2003), adding depth to questions on the perceptions of credibility of information sources (Flanagin & Metzger, 2008).

1.2.5 Bridge to education

The aim of this study is not to stop at the theory of information science, but rather to use this as a foundation to build a bridge to education practice, specifically with regard to the use of information and information channels.

Lazonder and Rouet (2008) reviewed a number of studies looking at the metacognition involved in information seeking on the internet. Their purpose was to find ways, through education, to address pupils' lack of attention to the credibility of information. Bowler (2010b) used talking during searches to get pupils to clarify their thinking. Pupils are able to engage in metacognition with respect to information searches. Madden *et al*. (2012) recorded and analysed levels of metacognitive activity by students searching for data. It appears that pupils are able to assess the credibility of the information they are accessing. However, this appears to happen only when researchers call the participants in their studies together and interview them (Agosto, 2002; Finley & Watmire, 2012; Flanagin & Metzger, 2011; Francke & Sundin, 2012; Gasser *et al.*, 2012; Sundin & Francke, 2009; Walraven, Brand-Gruwel & Boshuizen, 2009).

One of the findings with adults' information searches is the reliance on intuition and experience to evaluate the credibility of the information they find informally (Julien & Michaels, 2002). This is clearly a drawback for pupils, whose experience is limited (Eastin, 2008:30).

Walraven, Brand-Gruwel and Boshuizen, (2009) found that while pupils do not evaluate the credibility of information, they do evaluate whether information satisfies the requirements of

the task they have been set. This finding could provide the link between information science and education. It appears that the pupils are concerned about answering what the teachers are asking. The finding that pupils do not bother about assessing the credibility of their information sources could thus be a function of the fact that tasks set by teachers do not explicitly expect pupils to assess the credibility of the information.

From what has been discussed it would thus appear feasible that educators could influence pupils' information behaviour by rewarding information channel credibility checks with higher marks. In the terminology of the Mayer, Davis and Schoorman trust model (1995) this would amount to increasing the risk component of misplaced trust. Although the possibility of school information-related interventions is noted, these will only be explored in more detail in Chapter 6.

Flanagin and Metzger (2011) found that children rated information from Wikipedia less believable than exactly the same information found on a different site. Were they following a set of criteria they had been taught, which led them to an erroneous conclusion? Walraven, Brand-Gruwel and Boshuizen (2009) identify 29 criteria pertaining to assessing the credibility of information. Warnick (2004) notes a trend away from assessing web sites on author's credentials towards the design of the site, as well as its usefulness to the user. Studies of adults would indicate that while they tend to be more concerned about the credibility of information than pupils, certainly very few formally assess it (Charbonneau, 2015; Ek, Eriksson-Backa & Niemelä, 2013; Flanagin & Metzger, 2011). Perhaps pupils should be educated to judge the contexts of their information searches. Some contexts are controversial, while in others it is reasonable to trust that one's fellow human beings are not bent on deceit. Thus the topic and the context of the information need should influence the seeker's approach to the need for assessing information credibility (Bowler, 2010c; Duffy, Liying & Ong, 2010; Francke & Sundin; 2012; Gasser *et al.*, 2012; Leckie, Pettigrew & Sylvain, 1996).

Certain tasks are classified as information-intensive (Hepworth, 2004) and this points to the need to include attention to professions that are characterised by such tasks. By doing this one can get a more objective perspective of adult good practice pertaining to information seeking. This might also be something that can be aligned to educational contexts.

Thus from the education perspective discussed above, intervention is needed and feasible. Before embarking on this sort of strategy, it needs to be ascertained what is reported in the literature on standards of credibility checking for the adult world pupils are to enter. This is

discussed briefly in Section 3.4.3. It is furthermore necessary to understand the factors influencing pupils' perceptions of information channel credibility in order to bring the two together. This is something that needs to be addressed in empirical work.

1.2.6 Need for further study

From the brief literature review, as well as a more extensive search of databases and other resources, it appears that although there is some reported research on perceptions of information channel credibility, there does not appear to be enough consensus to lead to interventions enhancing appropriate information behaviour at school level.

Flanagin and Metzger (2000), comparing internet users versus non-internet users' perceptions of the credibility of information in newspapers, radio, television, magazines or the internet, found no significant difference. More recent studies reflect changing emphasis on information sources, with much greater focus on online resources (Ek, Eriksson-Backa & Niemelä, 2013; Huvila, 2013; Khoo, 2014).

As has been discussed in preceding sections, much research has been done on the information behaviour of both adults and pupils and their preference for different information channels. However, as has been noted, very little has been studied with regard to the effect of the following on the perceptions of the credibility of information channels:

- The context or purpose of the information need
- The risk or consequence to the seeker of acting on incorrect information
- The underlying motivation for the information need (self-generated or imposed tasks).

Earlier comparative studies have confined themselves to the more formal perspective of media studies and compared newspapers, magazines, television, radio and the internet as information channels. They have thus not included face-to-face contact as an information source, which in reality is an option open to an information seeker. Shenton and Dixon (2003) note that despite the many studies showing the use of other people to be the most common information-seeking method pursued by youngsters, it has seldom been the subject of detailed examination. In fact it has sometimes been regarded as an inferior information seeking method compared to the more traditional information channels. However, substantially more attention has been paid to interpersonal information sources, especially with all the work on ELIS (Bowler, 2010b; Fisher, 2004; Genuis, 2012; Hektor, 2003; Kari & Savolainen, 2004; Lim, 2013).

Walraven, Brand-Gruwel and Boshuizen (2009) recommend that future research should aim at developing instruction for students in information problem solving, focusing on evaluating information, particularly since it is important throughout life.

Flanagin and Metzger (2000) note the lack of consensus from the studies on the perceived credibility of internet information and recommend more research covering multiple media types and more information types.

Taylor's (1991) work on information needs identifies the first stage as a vague sense of something missing. Similarly Kuhlthau's (1991) model is initiated by uncertainty. When a teacher sets pupils a typical school task, a need for information is imposed on pupils. Their understanding of this need might be incomplete, affecting their information behaviour. Further research should closely monitor differences between imposed and self-generated tasks.

These areas of previous research offer potential for a study that could lead to a better understanding of perceptions of information channel credibility. If this study is focused specifically on information behaviour of school pupils, the improved understanding can be directed to interventions that could have a positive impact on the information behaviour of the next generation of adult information seekers.

1.3 PROBLEM STATEMENT AND SUB-QUESTIONS

The brief review of the literature and the preceding discussion served as context for the problem statement, namely:

> **How can school pupils' perceptions of information channel credibility inform school-based interventions?**

In order to answer the research question, the first step was to develop a framework within which to assess perceptions of information channel credibility.

- What has been reported on perceptions of information credibility and information channel credibility?
    - School pupils
    - Students and adults
    - Professionals in information-intensive environments

- How can trust models guide a study of pupils' perceptions of information channel credibility?

Based on answers to these issues, a model was presented to collect data to answer the following questions:

- What factors influence school pupils' perceptions of information channel credibility?
- What school-based interventions could be recommended to address the shortcomings in the perceptions of pupils that can prepare them to meet the information requirements of adulthood?

1.4 DEMARCATION OF THE STUDY

1.4.1 Demographic demarcation of the study

This study is focused on the information behaviour of high school pupils, thus generally in the age group from 13 to 19 years old, with specific reference to perceptions of the credibility of information channels. While the aim is for the result to inform teaching practice, the study must overlap into the everyday lives of the pupils, as they cannot be separated from the context in which they live (Courtright, 2007; Wilson, 1997).

1.4.2 Geographic demarcation of the study

The study is located in a city area of the Mpumalanga province of South Africa.

1.4.3 Topical demarcation of the study

The information channels included in the study differ slightly from previous studies of adults in that they focus specifically on information channels that youths would actually access when seeking information, e.g. the internet, peers, knowledgeable adults, television, books (Agosto & Hughes-Hassell, 2005; Madden, Ford & Miller, 2007; Rieh & Hilligoss, 2008) and possibly subdivisions of these.

This study did not aim to look at the credibility of information channels but only the perception of their credibility.

1.5 LIMITATIONS OF THE STUDY

The empirical part of this study was limited to a specific area of South Africa and further to three schools within a particular city area. This could affect the generalisability of the findings, but since these schools were chosen to reflect the spectrum of South African schools it is felt that they are sufficient to draw conclusions on the value of the model and the nature of interventions needed. Further argumentation for the choices of study sites and research participants is provided in Section 4.4.6.

This study deliberately covered a spectrum of pupils in an attempt to incorporate ones very well acquainted with internet usage as well as those with very limited exposure. While this can illuminate the topic, it might affect the generalisability of proposed education interventions to environments where the pupils are predominantly high-end internet users. In practice suggestions for interventions will need to draw on guidelines on information literacy that are well-grounded in studies of information behaviour, such as those of Kuhlthau, Maniotes and Caspari (2012) and Hepworth and Walton (2009).

1.6 AIM, OBJECTIVES AND VALUE OF THE STUDY

There appears to be a lack of focus on pupil perceptions of information channel credibility in previous studies on the information behaviour of pupils – in school context as well as everyday life. There are different levels at which the credibility of information can be considered: the credibility of the information itself, the credibility of the information source or the credibility of the information channel through which the information is found. For the purpose of this study, the focus was on the information channel. The aim of the study was to propose a model that can guide studies on information channel credibility perceptions to inform school-based interventions for guiding pupils to undertake credibility assessments in line with those of information-intensive professions. Objectives include determining what was published on trust, credibility and risk, suggesting a model as framework and collecting empirical data to (1) determine the credibility perceptions of pupils in selected South African schools and (2) to test the model's suitability for future use based on its applicability to the collected data.

This study contributes to the limited body of work in this area by developing a model as a credibility (trust) framework within which to study perceptions of information channel credibility. This served as a framework for data collection, which was used to compare the findings with those of other studies. The model can guide other studies and the findings can

also be used to inform school-based interventions to improve pupils' information behaviour. (Recommendations in this regard are made at the end of the thesis.)

1.7 METHODOLOGY

The study started with a literature analysis of similar studies of trust and context in order to develop a framework to guide the empirical component. The next phase of the study was to present a strategy to guide a survey of school pupils' perceptions of the credibility of information channels. The survey collected mostly descriptive quantitative data, and limited inferential statistics and qualitative data.

High school pupils have personal contexts. Information needs either originate as self-generated tasks or tasks imposed by teachers. Pupils access information via various channels. People generally seek reference, commercial, leisure or current affairs information. The level of risk perceived by the pupils and whether they have previous experience of the information need could affect their information channel credibility perceptions. Thus if one wants to understand high school pupils' perception of information channel credibility, one needs to understand how the context, the risk, experience, type of information and the origin of the information need affect each other.

The studies that have contributed most to a decision on the methodology include the following: Agosto (2002), Duffy, Liying and Ong (2010), Flanagin and Metzger (2000), Fogg *et al.* (2001), Hilligoss and Rieh (2007) and Madden, Ford and Miller (2007).

A number of studies, including *Consumer Web Watch* (Stanford *et al.,* 2002) and that of Agosto (2002), asked participants what makes a web site credible and then analysed the responses. Fogg *et al.* (2001) gave participants random sites, recorded which were rated best and analysed the characteristics of the sites to ascertain what commonality existed. Madden, Ford and Miller (2007) got participants to rank sources for perceived usefulness, while Flanagin and Metzger (2000) got participants to rate the credibility of mass media types on a 1-7 point scale. Hilligoss and Rieh (2007) got participants to keep a diary of their information seeking. Later they interviewed the participants and only then did they introduce the aspect of source credibility to the survey in order to avoid influencing the results.

The choice of method for this study was to get participants to rank their perceptions of the credibility of information channels for specific information needs. A questionnaire appeared

to be the most suitable method for this. The questionnaire was set in such a way that it was possible to analyse the effect of

- Context
    - Information in context
    - Person in context
- The origin of the information need
    - Imposed
    - Self-generated
- Perceived risk to the pupils associated with obtaining unreliable information.

It was also possible to check if there was an impact of

- Age
- Gender
- Background knowledge
- Internet experience
- Experience in the particular information need.

One of the problems mentioned in Flanagin and Metzger's (2000) study was the broadness of the category internet. They acknowledged that this caused blurring of their results because often, for instance, a newspaper would have a parallel web site. It would then be difficult to isolate what was being tested – the web site or the newspaper. As a result a decision had to be made for this study as to whether to break up the internet into its many current components, knowing that by the time this was published even more components might have been devised, or to accept a consolidated channel of "the internet." Castillo, Mendoza and Poblete (2013) focus on Twitter, Huang (2015) focuses on blogs, Kim and Ahmad (2013) on social media and Khoo (2014) on discussion forums. This study, while acknowledging the value of such specialisation, chooses to consolidate this and refer to the general term of the internet.

Hilligoss and Rieh (2007) found that credibility judgments are embedded in the information seeking process, as the choice of information channel indicates an implicit judgment of its credibility. However, a problem encountered in studies that assessed the actual information seeking was the possibility of information channels being chosen for convenience rather than credibility (Biddix, Chung & Park, 2011; Duffy, Liying & Ong, 2010). In order to avoid the effect of convenience, this study will not ask participants to get information but rather just to rank information channels according to their perceptions of the credibility of the information channels for the particular scenario.

Acknowledging the strengths and shortcomings of the above-mentioned studies, this study conducted a survey using a print-based self-administered questionnaire among pupils from three different urban schools spread across the socio-economic spectrum. The focus of the survey was credibility perceptions of information channels. Other aspects of context were recorded to enable analysis of the effect of context on perceptions.

Before the empirical part of the study was undertaken, permission was obtained from each of the schools participating in the survey for their pupils to be involved. Permission was then obtained from the faculty committee for Research Ethics and Integrity of the Faculty of Engineering, Built Environment and Information Technology of the University of Pretoria. Only on receipt of an informed consent form (see Appendix C) signed by pupils and parents were the pupils allowed to complete the survey questionnaire.

1.8 CLARIFICATION OF CONCEPTS

For the purpose of this study the following interpretation of key concepts will be used:

Credibility: Credibility has two connotations. The one is trustworthiness and the other is the perception of trustworthiness (Flanagin & Metzger, 2000). For this study, when the latter connotation is used, it will be referred to as the perception of credibility.

Credibility of information: It is a multidimensional property of information including believability, accuracy, trustworthiness, unbiasedness and completeness (Duffy, Liying & Ong, 2010; Flanagin & Metzger, 2000; Hilligoss & Rieh, 2007). The perception of information credibility would be that the information is perceived to be believable, accurate, trustworthy, unbiased and complete.

Credibility of information channel: This is not the credibility of the information. It refers to the credibility of the medium (i.e. the channel) through which the information is accessed.

Decimal places The rationale for the number of decimal places shown in this document is pragmatic in order to avoid distraction without losing rigour. If percentages in a table are there for comparative purposes for instance, no decimal places are shown. However when a statistic is calculated that is being used to determine statistical significance, then appropriate decimal places are shown.

Sometimes percentages add up to 99%. This is not of concern, as it is simply a result, in that particular set of percentages, of more numbers rounding down than up.

Imposed tasks: A task where one is finding information for someone else or where someone else sets the task. Usually in a school and work context the task and thus the information need are set by a teacher or one's boss (Gross, 1999; Kostagiolas *et al*., 2014; Shenton & Dixon, 2004).

Information behaviour: This is the combination of acknowledging the need for information (or not), searching for the information and then using it (Wilson, 1999). Some consider all these as information-related activities (Case, 2012).

Information channel: There needs to be clarification of the difference between an information source and an information channel. For the purpose of this study the information source refers to the originator of the information. An information source can be accessed by an information seeker in any number of ways. These are then referred to as information channels (Case 2012). A typical example is that many newspapers have an online version. The journalist would be the information source but both the newspaper and the online web site would be different information channels. The term "source" will be used instead of "channel" in the questionnaire to avoid confusion among pupils. It is acknowledged that there are studies in information science literature that refer to books, journal articles, etc. as information sources, e.g. Woudstra and van den Hooff (2008) and some studies cited by Case (2012).

Self-generated tasks: This is a task where one is seeking information for one's own interest and purposes (Gross, 1999). Gross (2001) notes that while teachers do try to give relevant assignments to pupils, these are nonetheless still 'imposed' and are regarded as such by the pupils. In the survey on which this paper is based these tasks were referred to as simulated self-generated tasks.

Trust: The complex relationship between (1) trustee and (2) trustor in a given (3) context is referred to as trust. Each of the three components contributes to the strength of trust (Mayer, Davis & Schoorman, 1995:715). The strength of the trust is dependent on the credibility of the trustee (perceived or real). For the purpose of

this study the trustee will be the information channel. The trustors will be school pupils. Credibility is an important component of trust.

Trustworthiness: Worthy of trust because of its inherent characteristics – reliability, unbiasedness and fairness. This is not based on a trustor's perceptions but is factual and measurable. The subject (or information source or information channel) under consideration must do what it claims to do for a specified context (Hilligoss & Rieh, 2007).

1.9 OUTLINE OF CHAPTER CONTENTS

The outline of the chapter contents is as follows:

Chapter 1 This is the introduction to the study. It contains the rationale for the study followed by a brief literature review, research questions (and sub-questions), clarification of concepts, demarcation of the study, limitations of the study, methodology and outline of chapters.

Chapter 2 This chapter is a literature analysis of the theory of trust, credibility and risk. Trust is an essential component of credibility, thus beginning with a study of trust models, the chapter leads logically to a study of risk and credibility.

Chapter 3 A literature analysis of context is covered here. Information needs occur in a specific context and information is available through various information channels. These will be considered in the context of school pupils' information needs. Pupils' information contexts will be compared in this chapter to those of adult contexts in information-intensive professions such as law and journalism.

Chapter 4 Details of the design and methodology of the research are laid out in this chapter. The literature analysis and table of related studies provide the guide on which choice of methods is based. The justification for choice of participants, the information channels to be tested, as well as the information needs posed to the participants is made here. Details of the statistical methods and questionnaire will be outlined.

Chapter 5 Findings from the empirical survey will be presented in this chapter.

Chapter 6 The correlation with the findings of the literature analysis will be discussed. This chapter will also include a discussion on how the findings can be mapped to the education context with a view to suggesting interventions in schools to improve the information behaviour of the next generation of adults.

Chapter 7 This chapter will return to each of the research questions and sub-questions to clarify that they have been addressed. The chapter will then wrap up with recommendations and suggestions for further studies, as well as conclusions.

CHAPTER 2

TRUST, CREDIBILITY AND RISK

2.1 INTRODUCTION

This study is of high school pupils' perceptions of information channel credibility. One of the research questions is "How can trust models guide a study of pupils' perceptions of information channel credibility?" This chapter will begin by briefly looking at trust in general and then trust models and their applicability to trust in information. Risk will be shown to be a key impetus in the trust relationship. In the trust relationship between the information seeker and the information source, there is on the one hand the risk of the information not being trustworthy and on the other hand the risk resulting from acting on that information. Credibility will be approached from two perspectives. Firstly there is the credibility of the information itself and then there are the perceptions of the information's credibility (or the credibility of the information channel). The chapter will consider similar studies, which can throw light on the credibility of the information and on perceptions of information channel credibility. In Chapter 3 the documented requirements for selected information-intensive professions will be used to contextualise high school pupils' perceptions of information channel credibility further. Ultimately the aim is to inform school-based interventions to influence the information behaviour of the future generation of adults positively, especially in their professional capacity. Although noting and accommodating approaches and models from other disciplines, the study falls within the field of information behaviour, which will influence the choices made.

Many of the studies mentioned in this chapter deal with information credibility, whereas this study has focused specifically on the credibility of the information channel. This is not a problem, as the more general perspective is valuable for the focused vision.

2.2 TRUST

Stanford Encyclopedia of Philosophy distinguishes between trust and trustworthiness. Trust is an attitude while trustworthiness is a property. Trust is warranted if it is well-grounded towards a trustworthy person thus minimising the risk associated with trust. Marsh (1994) provides a useful synopsis of research and definitions of the theory of trust with which it is

beneficial to lay a foundation for this study. Trust (or lack of it) occurs when individuals facing ambiguous situations make choices based on their perceptions of the good or harm that could result from their choice.

One of the main components of credibility is trust (Flanagin & Metzger, 2008:5; Helligoss & Rieh, 2007) and hence it seems logical to start a study of perceptions of credibility by studying research reports on trust with specific reference to trust models, causes of trust, types of trust and trusting behaviour. Trust models are attempts by authors to synthesise the components of trust into an explanation of their inter-relationship (Mayer, Davis & Schoorman, 1995). Hence a look at various trust models will be the starting point of this section of the literature analysis.

2.2.1 Trust models

There are many trust models in various fields covering aspects that are of relevance to this study, e.g. trust between individuals in an organisation (Mayer, Davis & Schoorman, 1995), between parties involved in e-commerce (Ramchurn *et al.,* 2004) and peer-to-peer file sharing (Wang & Vassileva, 2003). Trust and reputation management models assess trust in a distributed environment (Marsh, 1994; Mui, 2002; Ramchurn *et al.*, 2004; Xiong & Liu, 2003) while Mayer, Davis and Schoorman (1995) look specifically at the components of a single trust relationship. Mayer, Davis and Schoorman (1995:718) offer a detailed summary of numerous authors' work on trust. Much of the recent work on trust models covers mathematical algorithms aimed at minimising risk associated with e-commerce (Hoogendoorn *et al*., 2014; Ibrahim & Walid, 2014; Jelenc *et al*., 2013; Jiang *et al*., 2012; Kim & Ahmad, 2013; Lai, Liu & Lin, 2013; Li, Jiang & Wu, 2014; Liu, Datta & Rzadca, 2013). While enlightening, this is not the focus of this study and will only be used when such studies shed light on credibility perceptions.

Essentially trust models are of two types (or a hybrid of these): hierarchical or networking (sometimes referred to as distributed). Hierarchical trust models work on the principle that one trusts anyone above one in the hierarchy and hence anyone they in turn trust. In networking trust models (or distributed trust models) on the other hand, trust is more fluid and transitive – if A trusts B and B trusts C, then A will also trust C (Abdul-Rahman & Hailes, 1997; Wang & Vassileva, 2003).

Figures 2.1 and 2.2 are generic models reflecting hierarchical trust and distributed trust. Both have been put together for illustrative purposes, loosely aggregated from studies that will be

covered in more detail later (Abdul-Rahman & Hailes, 1997; Marsh, 1994; Ramchurn *et al.,* 2004). In the medical context in Figure 2.1 a hierarchical form of trust is illustrated.

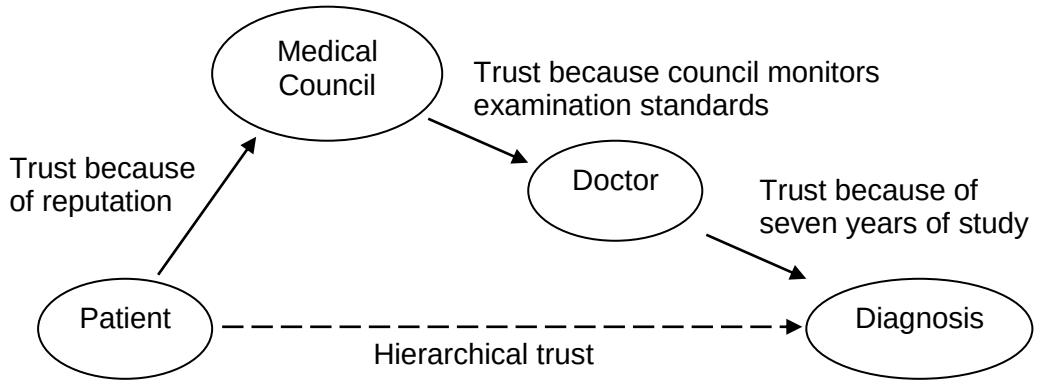


Figure 2.1 Generic example of hierarchical trust

Marsh (1994) notes the role of professional associations in enhancing trust of people such as doctors. If patients trust the Medical Council as the authority setting the standards in the medical field, then they will trust the doctors who are endorsed by the Council.

The generic example of distributed network trust in Figure 2.2 is an illustration to show the components generally found in such a network (Abdul-Rahman & Hailes, 1997). It is not within the scope of this study to go into these models in detail; the figure is merely intended to illustrate the principle underlying this study. The figure illustrates transactions typical in the e-commerce context, with the credibility of the seller being calculated based on feedback from others with whom they have transacted. The trustworthiness of the source of feedback is often also taken into consideration.

- Every arrow represents an interaction and its associated feedback taking place in a context specific to that transaction.
- The trust value of any particular agent is the sum of all the products of feedbacks with the credibility of the sources providing the feedback (T).
- The whole network is located in a community context.

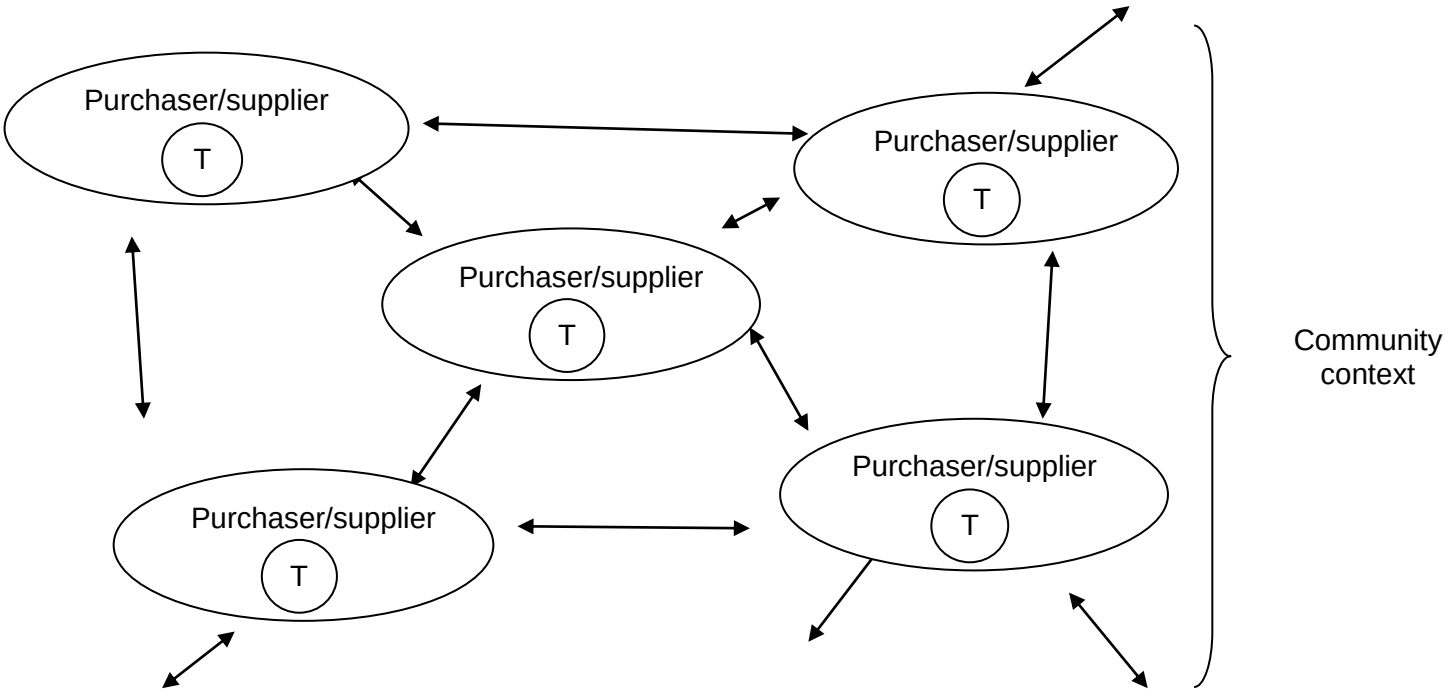


Figure 2.2 Generic example of distributed network trust

It could be argued that even this structure is a hybrid of hierarchical and distributed systems. Some over-arching authority is required that calculates the credibility rating of each participant. The other participants need to have enough trust in this authority to accept its calculations without doubting that there might be unfair manipulation. In the school environment the teacher could be seen as the authority guiding pupils' assessment of trustworthiness, while peer-to-peer interaction about trustworthiness of sources would represent the distributed components.

Case *et al.*'s (2004) studies of the decline of the two-step information seeking process (consulting an expert) in favour of the diffused sources available on the internet, Lankes' (2008) findings on the shift from reliance on the authority of an expert to confidence in the cohesion of multiple internet sources and Behrends' (2012) observation of the move from libraries to the internet, all fit in with a trend towards emphasis on distributed models rather than hierarchical ones. Hence the trust models discussed are of the networked (or distributed) type.

Much attention is currently being paid to trust in the environment of internet interactions and trust models are not only being developed theoretically but are also being applied in the reputation ratings of e-commerce organisations such as eBay (Wang & Vassileva, 2003). A

sample of these e-commerce models will be briefly considered, culminating in more generalised models. While information seeking by high school pupils does not necessarily involve the commercial focus of the studies that will be covered, there is always a cost in any information search, whether it be time (Agosto, 2002) or information quality (Rieh, 2002).

Ramchurn *et al.* (2004) have devised a computational model of trust for use in evaluating trust between agents entering contracts. Their findings are that trust is a function of confidence and reputation. Confidence is based on the agent's actual dealings with the other party and will develop over time (either positively or negatively). Reputation, however, is based on other people's experience and is not as powerful as personal experience. In the absence of personal experience, reputation is the best an agent can do. Chatman's (1996) findings concur with this. She finds that trust (and associated risk taking) with respect to information sources relies on two factors – recommendation by a trusted insider and the source having proved itself trustworthy in the past. These two aspects will be reconsidered when discussing school-based interventions to address possible errors in pupils' perceptions of information channel credibility. Ramchurn *et al.* (2004) also note that most trust models neglect the fact that agents generally interact according to the norms of the society or environment within which they operate. This could have significance in researching why pupils have been found to neglect assessing the credibility of information (Agosto, 2002; Shenton & Dixon, 2004; Walraven, Brand-Gruwel & Boshuizen, 2009).

Abdul-Rahman and Hailes (1997) devised a distributed trust model for interaction on the internet. They acknowledge that although a distributed model is more democratic, it does lay more responsibility on the individual to assess the trustworthiness of those with whom they are dealing. Their model makes provision for recommendations by other agents as opposed to direct trust. They assert that the credibility of a trusted authority decreases as the number of trustees grows. This is of great significance when applied to the perceptions of information channel credibility, particularly in the context of the information source proliferation on the internet. An important part of this model is the role of recommendations by which trust can be built on the recommendation of others whom one trusts. This, too, is relevant in a study of pupils' perceptions of information channel credibility.

Wang and Vassileva (2003) also differentiate between trust and reputation for their peer-to-peer file sharing trust model. Trust is based on the trustor's own experience of the trustee, while reputation is dependent on other people's assessment of the trustee. Of significance to the study of pupils and information channel credibility is Wang and Vassileva's (2003) observation that both trust and reputation, in their study, are based on very few interactions

between trustors and trustees. In the case of pupils, their experience is often limited (Enochsson, 2005) and thus their assessment of credibility is based on a limited number of actual interactions. Agudo, Fernández-Gago and Lopez (2009) find that trust is dynamic and changes over time.

Xiong and Liu's (2003) peer-to-peer trust model is based on the premise that feedback from peers alone is inaccurate and inefficient. They use three parameters for assessing trust, namely actual transaction with peers, the number of transactions involved and the credibility of the source itself from which they receive feedback. In addition to this, they also introduce two adaptive factors in that they make provision for the context of the transaction as well as the context of the community in which these transactions are taking place.

Marsh (1994) collates work on trust from the fields of social psychology, philosophy and sociology in order to apply trust to distributed artificial intelligence. Aspects emphasised in his model are that trust is subjective and that it involves a cost/benefit aspect. Marsh's model deals mathematically with trust, but of significance to this study of information channel credibility is the need for the perceived benefits of trust to be greater than the perceived cost of not trusting. Built into his model are the effects of whether the trustor is an optimist or pessimist, as well as the effect of memory of past experience on decisions of whether to trust or not. Also of significance is the concept of a co-operation threshold. This is the minimum level of trust required for co-operation to take place. He also points out that trust is not the only consideration in everyday decisions; ethics, morals, cultural pressure as well as the needs and wants of the decision maker influence decisions.

Mayer, Davis and Schoorman (1995:712) found that existing trust models were too context-specific and set about developing a universal model that would be applicable to interpersonal situations with organisations. Their integrated trust model incorporates the role of the trustee's trustworthiness and the trustor's risk taking in the relationship between the two. In the context of this study of the information seeking behaviour of high school pupils, the trustor is the pupil while the trustee is the information supplier, which could be the actual person or else the author behind written information. In the case of school pupils seeking information, the role of teachers is twofold. They can be the source of information (trustee) or they can fulfil an intermediary role, advising pupils of the credibility of other sources (feedback loop). This relationship is depicted in Figure 2.3.

Of significance to this study of information channel credibility are Resnick, Zeckhauser, Friedman and Kuwabara's (2000) comments. They note that in long-term relationships, trust

grows in the shadow of the future. One's actions are tempered by the effect they will have on one's trustworthiness for future interactions. However, they note that in the virtual world of internet interactions or e-commerce the chance of any two individuals interacting again is often slim compared to face-to-face interaction. Thus trust models compensate for this by replacing the many interactions of a specific pair over time with an aggregation of many users' perceptions of one particular user. This is known as a reputation model. They note that this amounts to quality of information being replaced with a vast increase in quantity of information on which trust needs to be based.

Kostagiolas *et al*. (2014) use a very simple trust model: Trust of the source leads to perceived credibility of the information. This is then used to analyse the effect of work-related or personal, motivated factors on credibility perceptions of information. Lucassen and Schraagen (2012) propose a similar trust model where levels are concentric: Trust in information is influenced by trust in its source, which is influenced by trust in the medium, which is influenced by a general propensity to trust.

Giovannini *et al*. (2015) propose a newer trust model for commerce over mobile devices. Factors in the model affecting mobile trust include ease of use, usefulness, enjoyment, trust of the internet and general trust disposition. The view of Johnson, Rowley and Sbaffi (2015) was also noted. They propose a trust model for health information that uses core criteria of credibility and usefulness of information with influencing factors of information quality and peripheral clues. While these newer trust models were not available when this study was begun, the essence of what they cover is contained in previous studies.

While the studies referred to are not focused on assessing trust of information, they do provide valuable insight for this study. Table 2.1 is a tabulation of relevant findings from each of the studies, with an additional column noting the significance for information channel credibility.

Study	Components/ Characteristics	Relevance to information channel credibility

Study	Components/ Characteristics	Relevance to information channel credibility
Abdul-Rahman & Hailes (1997)	Trust built on recommendations of others	The role of other people in assessing information credibility
Agudo, Fernández-Gago & Lopez (2009)	Trust is dynamic and changes over time	Necessary to analyse the effect of age and experience on trust
Giovannini *et al*. (2015)	Ease of use, usefulness, enjoyment, trust of the internet, general trust disposition	Relevance of context and possible effect of usefulness of information rather than information credibility
Johnson, Rowley & Sbaffi (2015)	Core criteria of credibility, usefulness of information	Effect of information quality and peripheral clues on credibility and usefulness
Kostagiolas *et al*. (2014)	Work-related or personally motivated factors	Trust of the source leads to perceived credibility of the information
Lucassen & Schraagen (2012)	Concentric components	Trust in information is influenced by trust in its source, which is influenced by trust in the medium, which is influenced by a general propensity to trust
Marsh (1994)	Utility of outcome Disposition of trustor Memory of past interaction Co-operation threshold	How important is the information? Has a source previously been useful? Co-operation threshold for trust
Mayer, Davis & Schoorman (1995)	Trustor's risk taking Trustee's trustworthiness	Consequence of using incorrect information Credibility of the information source
Ramchurn *et al.* (2004)	Confidence – personal experience Reputation – others' experience	In absence of personal experience one has to rely on others
Resnick, Zeckhauser, Friedman & Kuwabara (2000)	Quality of credibility replaced by quantity	Difficult to assess credibility of one source but corroboration between many sources is valuable
Wang & Vassileva (2003)	Confidence – personal experience Reputation – others' experience	In context of a limited number of contacts, the absence of personal experience causes one to need to rely on others' opinion
Xiong & Liu (2003)	Actual experience Number of interactions Credibility of source of feedback	Credibility of current information Previous experience with this source Other people's experience

Table 2.1 Studies of trust and their relevance to information channel credibility

As can be seen in Table 2.1, trust models found in the literature have not been developed for analysing trust of information but rather on the people providing the information (i.e. the interpersonal information sources). In spite of this, each study sheds light on the topic of this study and the third column indicates the researcher's interpretation of how the studies can be applied to trust of information (i.e. information credibility). The model devised by Mayer, Davis and Schoorman (1995) especially has a lot of potential to be adapted to add value to the study of information channel credibility and hence this model will be studied in greater detail in the following section before applying it specifically to assessing information channel credibility.

2.2.2 Mayer, Davis and Schoorman's (1995) trust model

Mayer, Davis and Schoorman (1995) developed their Universal Trust Model for the purpose of providing a generalised model for trust within an organisation. This is not designed for application to information channel credibility, but it does lend itself, with slight adaptation, to be applied to the context of trust of information.

Figure 2.3 is a diagrammatic representation of Mayer, Davis and Schoorman's (1995) model, showing the process from factors of perceived trustworthiness to the outcome of a trust relationship.

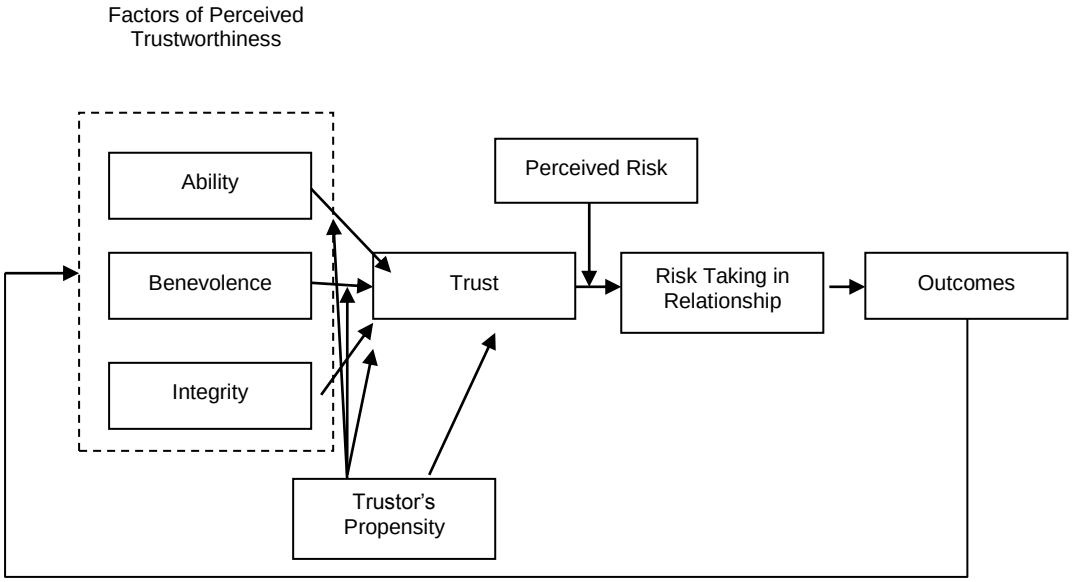


Figure 2.3 Mayer, Davis and Schoorman's trust model (1995:715)

The model begins with the factors of perceived trustworthiness and their influence on trust. These combine with the perceived risk and lead to the outcome of the trust relationship. There is also a feedback loop in which experience reshapes the initial factors of perceived trustworthiness, illustrated by an arrow from the outcomes back to the initial factors. The relationship between the trustor and the outcome is evidenced by trusting behaviour. According to the authors, this behaviour is measurable whereas trust itself is more difficult to measure.

The definition of trust they propose is "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer, Davis & Schoorman, 1995:712).

According to Mayer, Davis and Schoorman (1995:716) the trustor must be willing to take a risk as well as possessing a natural propensity to trust. The propensity to trust is the general willingness to trust others and differing levels of propensity between individuals is the source of variance in trust. This propensity to trust is the trust exhibited independent of information about the trustee. This could relate to the findings of information behaviour studies that pupils do not question information they access from books or the internet (Agosto, 2002; Shenton & Dixon, 2004; Walraven, Brand-Gruwel & Boshuizen, 2009).

The trustee needs to exhibit evidence of trustworthiness. Mayer, Davis and Schoorman (1995:717) identify ability, benevolence and integrity as explaining the major portion of trustworthiness. They note the similarity between these three components and Aristotle's rhetoric, which judges a speakers' integrity by three categories: intelligence; character (reliability, honesty) and goodwill (favourable intentions toward the listener).

The components of trustworthiness as identified by Mayer, Davis and Schoorman (1995) can be expanded as follows:

- Ability is domain-specific, meaning that while trustees' ability in a certain situation might enhance their perceived trustworthiness, this is not transferable to an unrelated situation (Mayer, Davis & Schoorman, 1995:717). In terms of an information source, while an author or institution might be well known or respected, this does not necessarily imply ability in the direction the information seeker is looking.

- Benevolence is the perception by the trustor of a positive orientation in the trustee. If the information seekers believe the source to be from outside their comfort zone,

they could perceive the source as not being benevolent (Chatman, 1996; Meyer, 2003; Spink & Cole, 2001). Flanagin and Metzger (2000) use theories of persuasion to explain their similar findings that when users sense manipulative intent, this has a negative impact on their perceptions of the credibility of the information.

- Integrity is "the trustor's perception that the trustee adheres to a set of principles that the trustor finds acceptable" (Mayer, Davis & Schoorman, 1995:719). As has been noted earlier, numerous authors mention pupils' lack of assessment of information credibility (Agosto, 2002; Shenton & Dixon, 2004; Walraven, Brand-Gruwel & Boshuizen, 2009).

The Mayer, Davis and Schoorman (1995) model will be used in the next section as a foundation onto which work, mainly by Levin, Whitener and Cross (2006) as well as Marsh and Dibben (2003), will be built in order to adapt their general trust models to be more specifically applicable to trust of information channels, i.e. information channel credibility.

2.2.3 General studies of trust and the implications for information channel credibility

The focus of this study is on pupils' perceptions of information channel credibility. While in the past there appears to have been limited research linking trust theory with that of information behaviour of pupils, this is becoming a growing trend (Flanagin & Metzger, 2008:19). In this section findings from various studies on trust will be built onto that of Mayer, Davis and Schoorman (1995) to give insight into the specific case of the trust of information which, although it is generally not explicitly mentioned in definitions of information behaviour (e.g. Wilson, 1999; Case, 2012; Fisher & Julien, 2009), is a component of the encapsulating concept of information behaviour. It should also be noted that this is a one-way model in the sense that it looks at pupils' perceptions of the credibility of information channels rather than trust between two individuals.

Levin, Whitener and Cross (2006) look at trust from the perspective of psychology research. While part of Mayer, Davis and Schoorman's model (1995) is the prerequisite for the trustee to have ability, benevolence and integrity, Levin, Whitener and Cross (2006) state that trust (between individuals particularly) is based primarily on:

- Similar demographics
- Trustworthy behaviour
- Shared perspective(s).

They also note that as the length of association between individuals increases, the trust conditions progress down the list. In other words, if one has only known someone for a short time, similar demographics will be the factor with the greatest influence on the probability of trusting them. With a longer association, trustworthy behaviour has a greater influence, while after a long association shared perspective counts most in establishing trust. Similar demographics do not necessarily need to pertain to physical proximity and similarity. Pupils could easily perceive greater similarity with someone on the other side of the world via the internet than with physically close people. This could be particularly relevant in a developing country where pupils are sometimes more educated than the communities from which they come. Mitra and Rana's (2001) work with the "Hole in the Wall" project in India is a typical example of untutored access to computers raising pupils beyond the level of their society.

Levin, Whitener and Cross's (2006) conditions for trust, with the inherent time component, similar demographics, trustworthy behaviour and shared perspective, move focus away from the trustor and onto the connection between trustor and trustee, i.e. in this study, between the pupil and the information channel. This perspective could shed light on the effect of media on the perceptions of credibility of information, as media are the vehicle through which information is perceived. Flanagin and Metzger's (2000) study focuses specifically on this aspect.

Using Levin, Whitener and Cross' (2006) observations, Figure 2.4 graphs, on the Cartesian plane, the relationship between the length of time of an association and the conditions on which trust is based.

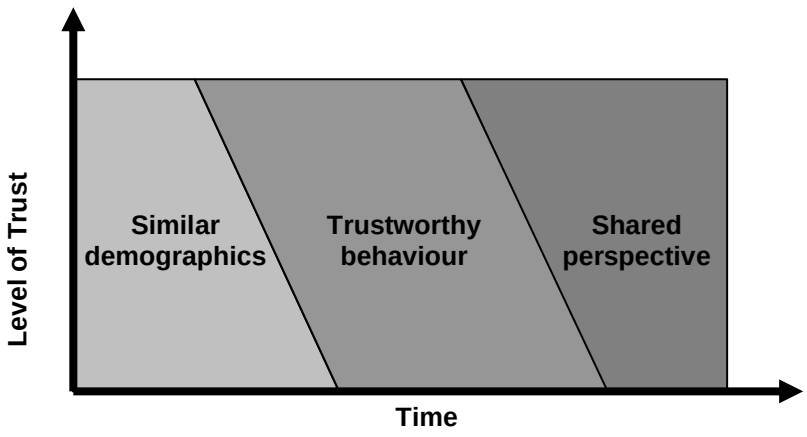


Figure 2.4 Changes in conditions for trust based on length of time of association

Figure 2.4 demonstrates conditions or bases for trust based on the length of time of association between a trustor and trustee. Initially the trust might function on blind trust (purely because of similar demographics) but as the relationship progresses over time and the feedback loop modifies, the trustor's perception of the trustworthiness of the trustee and trust would then be based on positive experience and finally on what the trustee actually has to offer.

This time-based effect on trust is supported by Flanagin and Metzger's (2000) findings. They found a time relationship between experience and level of perceived credibility of internet information. The longer users have used the internet, the greater their perception of its credibility. Of interest to this study is that they also found that in spite of more experienced users rating the information as more credible, they simultaneously were also more sceptical and checked the information source more thoroughly than inexperienced users. While they do not specifically relate inexperience with age, this could be of relevance to pupils' perceptions of information channel credibility.

Marsh and Dibben (2003) look at trust from the perspective of the trustor as the centre of the trust relationship and this adds another dimension to an understanding of trust. They divide trust into three layers, which could be seen as concentric rings with the trustor in the centre.

- Dispositional trust is a person's inherent personality trait.
- Learned trust is the tendency to trust in general based on one's past experience.
- Situational trust adjusts in response to differing contexts.

Dispositional trust is the trust inherent in the trustor and enveloping this is the trust learned from experience, while on the periphery trust is dependent on the specific context.

In the context of this study, learned trust would have been gained from accessing information (often) and experiencing whether it is credible or not. In Mayer, Davis and Schoorman's (1995) trust model, there is a feedback loop that enables the trustor to learn from the outcome (good or bad) of previous trust events. Based on this, the relative inexperience of high school pupils would need to be considered when studying their perceptions of the credibility of information (Eastin, 2008:30). In addition, notice also needs to be taken of Harris's (2008) observation that, although pupils are often described as digital natives, fluent in digital matters, they are often still novices at assessing the meaning and value of information they find. This problem of (lack of) experience is compounded by the issues discussed earlier in this section on the mathematical trust models developed for trust and reputations for e-commerce – virtually non-existent repeated interactions between any two participants on internet-based interactions.

In terms of situational trust, very little has been written on the effect of the context of information searches. Again, the literature that could be traced does not specifically focus on children. Marsh and Dibben (2003) list a number of subdivisions of situational trust that are relevant to this subject. Trust as despair occurs when someone has no option but to trust a source. This could be applicable in a situation of information poverty, such as might be present in an under-resourced school, as it matches Sitkin and Pablo's (1992:19) reference to learned helplessness with respect to a history of continuous major failure to achieve goals. Rieh and Hilligoss (2008) refer to the effect of context where certain books or people are regarded as credible by students because of the endorsement of the lecturer. This leads to a situation of bounding, in which certain sources of information are regarded as credible for the narrow purpose of a certain class context and not necessarily regarded as credible in the outside world.

Näsi *et al*. (2015) did not specifically research pupils looking for information but rather pupils' exposure to hate material on the internet. They then looked at the effect of this online exposure and its correlation with trust of acquaintances off-line as well as online.

In Table 2.2, the work of Mayer, Davis and Schoorman (1995), Marsh and Dibben (2003) and Levin, Whitener and Cross (2006) is collated in relation to one another and reveals commonality in content.

	Trust without cognitive basis	Trust in the credibility of content	Trust based on past experience	Trust that there is a common purpose
Factors of trustworthiness (Mayer, Davis & Schoorman, 1995)		Ability	Integrity	Benevolence
Types of trust (Marsh & Dibben, 2003)	Dispositional trust		Learned trust	Situational trust
Conditions for trust (Levin, Whitener & Cross, 2006)	Similar demographics		Trustworthy behaviour	Shared perspective
Application to perceived trustworthiness of information sources	Broader world-view, less geographically bound concept of similar demographics	Information source is from an expert in the field	Previously used trustworthy information sources	Learner feels a common purpose with information source

Table 2.2 Collating trust types with applications

The information from Table 2.2 will be useful in developing the data collection instruments and contextualising the empirical findings of this study to see if they agree.

2.2.4 Summary and synthesis of a trust model

While there is plenty of literature on trust, it is not geared towards trust of information. The studies that have been presented were selected for their potential for application to information channel credibility. A graphical progression of the information covered will be presented in Figures 2.5 – 2.8, culminating in a new synthesised trust model in Figure 2.9. In Chapter 4 this will be adapted to an information channel credibility model to be used to measure factors influencing pupils' perceptions of information channel credibility empirically.

Essentially every study of trust must be able to be stripped down to a relationship between the trustor and the trustee.

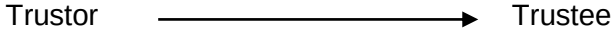


Figure 2.5 Simple depiction of trust relationship

Abdul-Rahman and Hailes (1997) add another dimension to this by introducing the input of a third party who gives information (e.g. a teacher) on the reputation of the trustee:

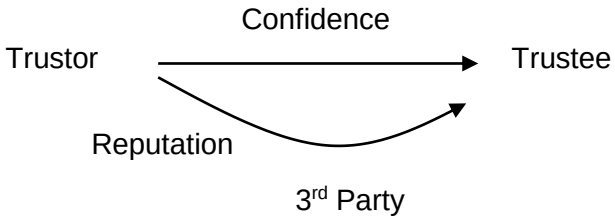


Figure 2.6 Trust relationship with third party input

Xiong and Liu (2003) introduce the context within which the trust relationship takes place.

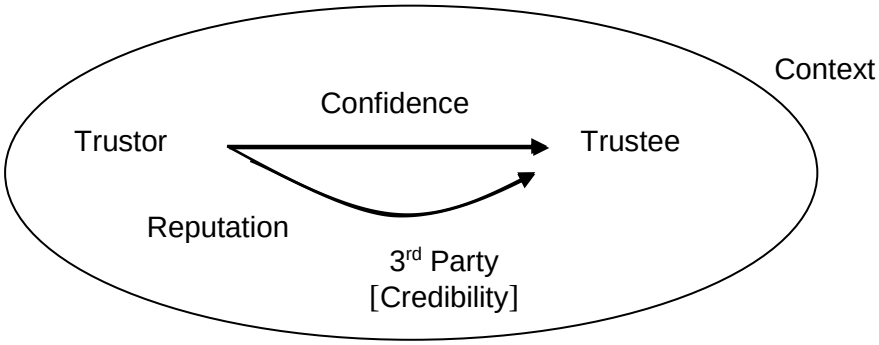


Figure 2.7 Trust relationship in a context

Marsh (1994) and Mayer, Davis and Schoorman (1995) look at moderating factors through which the trust relationship functions, as well as a feedback loop. All trustors have their own propensity to trust while the trustee has a perceived credibility, which will form restrictions that are represented as collars in the proposed model in Figure 2.9.

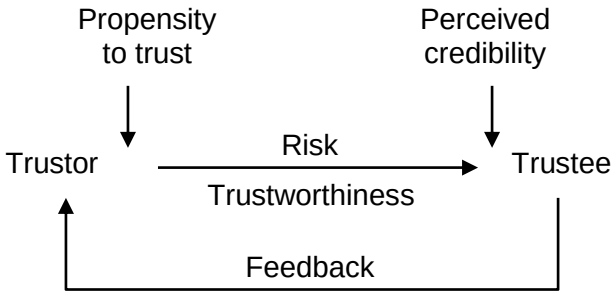


Figure 2.8 Risk and trustworthiness with a feedback loop

The trustor's propensity to trust and the perceived credibility of the trustee can be seen as restrictive collars through which the trusting behaviour takes place.

Synthesising all of the above, Figure 2.9 is proposed as a unified trust model that can be specifically applied to information channel credibility in Chapter 4.

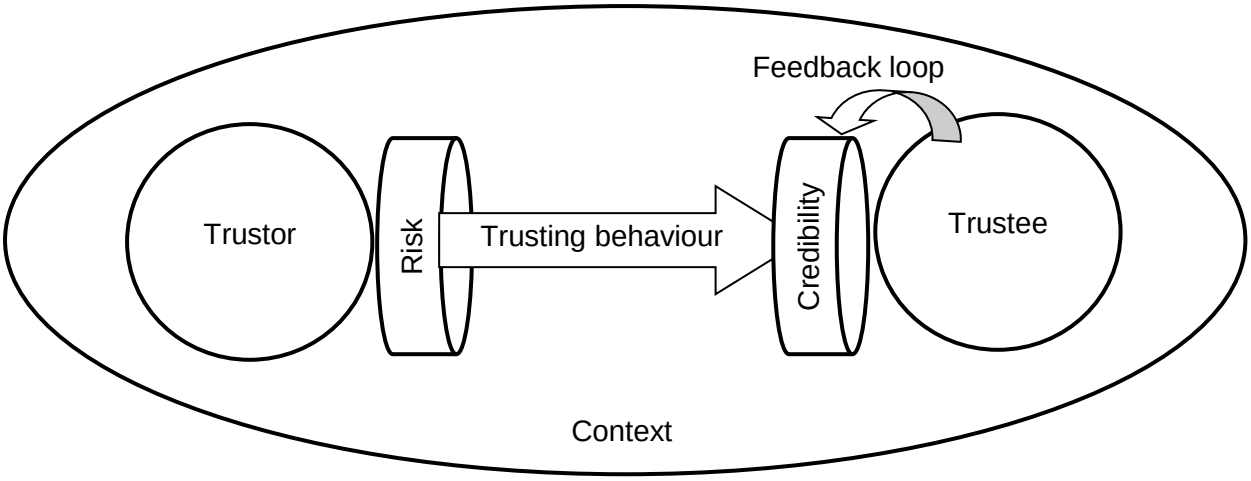


Figure 2.9 Proposed trust model for determining perceptions of information channel credibility

The discussions/opinions of authors of trust noted in the preceding paragraphs have been developed for specific contexts, but it appears that none have been focused on trust of information channels or as applied to school pupils. In Chapter 4 the model proposed in Figure 2.9 will be applied specifically to the context of information channel credibility applied to school pupils. Since Figure 2.9 will direct the empirical part of this study, key components are explained for the reader (some of these have been explained in preceding sections):

- Trustor: person seeking information; for the purposes of this study it will be a school pupil
- Trustee: provider of the information; for the purposes of this study it will be information channels
- Feedback loop: experience gained with a particular information source which may influence trust/perceptions of credibility in the future
- Risk: a limiting factor discouraging trusting behaviour. (It will be discussed further in Section 2.3.)
- Credibility: A characteristic of the information making it believable. (This is discussed further in Section 2.4.)
- Trusting behaviour: the observable, measurable outcome of the trust relationship.

2.3 RISK

There would be very little motivation to study trust or credibility unless there was a consequence to misplaced trust or credibility accorded to undeserving information. This consequence is the risk component, which is foundational to a study of credibility (Lee & Turban, 2001). Murray (1991) says that the higher the risk, the more information will be sought. Stigler (1961), referring to the risk and reward model, predicts that when choice alternatives are similar, i.e. low risk of making a wrong choice, search efforts will be reduced.

Risk analysis is a field of study that sheds light on risk. Simplistically, risk is a function of the probability of an event and the cost/benefit of this outcome (Slovic 1999). Risk analysis then compares:

Probability of an event x benefit/loss of its occurrence with probability that the event does not occur x loss/benefit of its non-occurrence

However, in reality, perception of risk is much more complex and subjective and Slovic (1999) contends that risk should be looked at contextually. Without prescribing what must be in a definition, he shows that in addition to probability and consequence, in any given context risk analysis could include gender, race, worldviews, affiliations, emotional aspects and trust.

Marsh (1994) makes a distinction between risk, uncertainty and ignorance in his study of trust. He contends that risk implies that one has experience of a situation and is thus able to make a calculated decision as to whether to trust or not. Uncertainty occurs when one has incomplete knowledge of the context in which a decision needs to be made, while ignorance is being in the position of having no relevant knowledge. This is a useful distinction when considering pupils who have limited experience in the field in which they are seeking information. This indicates a possible need to determine empirically if there is a relationship between experience and risk perception.

Sitkin and Pablo's (1992) definition of risk contains three useful dimensions for this study. They look at the outcome uncertainty, the outcome expectations and the outcome potential of a decision. The greater the uncertainty of the outcome, the greater the risk. Outcome

expectation they define as the gap between the aspiration and the expected outcome. The magnitude of the benefit of the potential outcome must outweigh the potential negative consequences associated with any decision. They discuss nine variables predicting risk behaviour under the headings (1) Individual characteristics, (2) Organisational characteristics and (3) Problem characteristics. Risk perceptions arise when the risk takers feel they can control risk by their knowledge and assessment of the context, thus reducing the probability of unfavourable outcomes. Organisational control systems either reward or punish risk taking and in this way shape the organisation's risk taking culture. Sitkin and Pablo use Ouchi's (1977) distinction between process control and outcome control. This distinction is relevant when considering educational interventions to guide pupils' information seeking behaviour.

The concept of satisficing and bounded rationality (Agosto, 2002; Simon, 1955) is relevant to a discussion of risk. People do not assess all the facts and find the optimum in decision making. They rather consider enough information to make a satisfactory decision. The practical boundaries within which rational people are willing to work are known as bounded rationality. These boundaries will be a function of the person's perceived risk of the consequence of acting on incorrect information.

Flanagin and Metzger's (2000) findings are that when misinformation is least damaging, then the verification is least rigorous and similarly for information where consequences are more damaging, the verification is more rigorous. Gunter (1992) found that the greater information seekers' involvement with a topic, the greater their concern with the information's credibility. In other words, the greater the risk or the involvement, the greater will be the attention given to the information's credibility. Lu and Yuan (2010) do not specifically refer to risk but they have found than the greater the information need, the more people turn to relational channels. For moderate information needs they prefer easy access over information quality.

Mayer, Davis and Schoorman's (1995) definition of trust emphasises the essential role of risk. Their model notes that risk perception sets a threshold, which trust must supersede before trusting behaviour can take place. Trusting behaviour will only take place when the trustee is willing to assume the risk required.

In the next section risk will be specifically addressed from the angle of its effect on information behaviour.

2.3.1 Risk as applied to information behaviour

Risk is a function of the probability of an event and the consequence or cost/benefit if this event occurs (Slovic 1999). Mayer, Davis and Schoorman (1995) find risk to be a controlling factor in trust behaviour. Flanagin and Metzger (2000) find that the less risk that is perceived, the less verifying of information occurs. Agosto (2002) and Simon (1955) use the concept of satisficing to explain why optimal decisions are disregarded in favour of lesser solutions, which fall within an acceptable risk range. Sitkin and Pablo (1992) and Marsh (1994) note that people control risk in decisions by knowledge. Sitkin and Pablo (1992) find that organisational control systems are able to shape risk behaviour within an organisation. Bjork and Kauppinen-Raisanen (2011) identify categories of information sources that have an impact on risk perceptions. Hovick, Kahlor and Liang (2014a) and Hovick, Liang and Kahlor (2014b) assess the effect of risk and demographics on information seeking actions.

Applying the discussion of risk to the context of information channel credibility assessment yields the following: Risk is a function of the probability of information being untrustworthy and the consequence of acting on the untrustworthy information. The risk associated with trusting information will influence what information is trusted. The less risk there is to the information seeker (i.e. the trustor), the less care will be expended on verifying the credibility of the information. Information that is sufficiently credible to fit within an acceptable risk range will be accepted rather than finding the best information. Risk will be calculated based on knowledge of assignment requirements. Organisations can put systems in place to set risk levels and hence shape risk behaviour.

Sitkin and Pablo use Ouchi's (1977) distinction between process control and outcome control. This distinction is relevant when considering educational interventions to guide pupils' information seeking behaviour. When a pupil's work is marked, this is output control. Perhaps educators should be marking the process rather than the output.

The discussion on risk can shed light on the observations of researchers on the information behaviour of school pupils. In a school assignment, risk is often not real and hence lack of attention to credibility is to be expected (Flanagin & Metzger, 2000; Shenton & Dixon, 2004). There are, however, organisational control systems (Sitkin & Pablo, 1992) that can be used to simulate risk and get pupils used to working under risk conditions experienced in the world outside of school.

2.4 CREDIBILITY

The term credibility is generally used to cover both the trustworthiness of information and the perception of its trustworthiness (Duffy, Liying & Ong, 2010; Flanagin & Metzger, 2000; Hilligoss & Rieh, 2007; Johnson, Rowley & Sbaffi, 2015). In this section these aspects will be treated separately. The differentiation is described by Flanagin and Metzger (2008) as the characteristics that make information worthy of being believed as opposed to those that would make information likely to be believed. As is stated in Chapter 1 in section 1.8, trustworthiness of information is based on its inherent characteristics and is factual and measureable. Perceived credibility of information, on the other hand, is the user's perception of information's trustworthiness and is thus a combination of the trustworthiness of the actual information, the context for which the information is needed and the user's own characteristics and perspective. In this study there is significant focus on the information channels rather than the information itself, but this does not affect the above clarification. The perceived credibility of an information channel is thus a person's perception of the credibility of the trustworthiness of the information channel.

This section will firstly cover the credibility of information and then the perceptions of information credibility. It should be noted here that while the focus of this study is on information channels, many of the references discussed cover the information. This does not materially affect the concepts discussed.

2.4.1 Credibility of information

Some authors use the alternative terms of cognitive authority or information quality (Rieh, 2002) in place of information credibility. According to Hilligoss and Rieh (2007), information is credible if it is worthy of being trusted. Credible information includes the characteristics of reliability, unbiasedness, accuracy, fairness and objectivity. These characteristics are imbedded in the information and not dependent on the subjective perceptions of the information seeker.

Flanagin and Metzger's (2000) research use believability, accuracy, trustworthiness, bias and completeness as the criteria with which to judge the credibility of information. They also note that the conventional avenues used by information seekers to validate the credibility of information firstly rely on their experience of a particular source and its credibility in the past. Secondly, one can take note of the genre of the source to guide one in evaluating the credibility of the source. Finally, the editorial process to which a source is subjected gives

the information seeker a measure of how much credibility to ascribe to that source. They then mention that these avenues are no longer necessarily effective or available when using the internet.

Gunter (1992) considers information credibility as having three possibilities, namely a supposedly objective property of the information itself, a stable innate disposition of the receiver to trust or distrust generally, or the perception of the receiver uniquely based on the specific context of the search. Of the three, only the first covers the actual credibility of the content, while the second and third would fall under the heading of perceived credibility. His findings are in favour of credibility being context-specific.

Shen, Chiou and Kuo (2011) have studied the effect of web page signals on users of online auction services. While their findings are specific to their context, they are applicable to information credibility in general. They found that seller reputation, product condition and argument quality influence the trust of auction sites. In the context of information searches, the seller corresponds to the information source, the product condition corresponds to the actual quality of the information and argument quality comprises the peripheral clues such as quality of the web site, graphics etc.

Dowling and Weeks (2011) use media analysis to assess the press coverage of a company. On initial inspection this might appear to belong in the next section, i.e. perception of information credibility. However, the analysis is of how credible the coverage is. In their study the analyst is aware of the characteristics of the company and analyses whether the coverage matches the facts. In media analysis the following is considered:

- Salience and sentiment analysis: This notes the number of times the company is reported on and whether the reports are positive or not.
- Theme and contradiction analysis: This looks at whether the press is reporting the same image the company is trying to portray.
- Problem and solution analysis: This covers the effect of the press coverage on the company.

In the case of information seekers, they can only analyse the media's perception of the product.

Meyer (2003) has researched groups of people working within an oral tradition rather than with written information. One of the functions she writes on is that of how traditional communities perceive and judge new information and then how they process it into their knowledge base. Since text separates the knower from the knowledge, this objectivity is

sometimes lost in oral societies. Meyer (2003) lists the following mechanisms that are used to validate new information sources:

- Elderly people act as knowledge stores for society.
- Information is channelled through the headmen to the community.
- Group opinion is used as a sounding board to reach consensus.
- Authority figure opinion is accepted by the community.
- Oral cultures tend to use concepts in situational frames of reference rather than as abstract concepts.

Johnson, Rowley and Sbaffi (2015) use the following criteria as measures of the credibility of information: whether one feels one can believe the information, the objectivity of the information, the impartiality of the information, the quality of the information and the extent to which it contains facts rather than opinions.

Table 2.3 summarises these studies, showing the criteria each reports to determine the credibility of information.

Study	Context	Criteria for credibility assessment
Dowling & Weeks (2011)	Press coverage	Salience and sentiment Theme and contradiction Problem and solution analysis
Flanagin & Metzger (2000)	Information seeking	Believability, accuracy, trustworthiness, bias, completeness Experience Genre Editorial process
Francke & Sundin (2012)	Credibility of Wikipedia	Stability of the source External consistency Situational Democratic
Gunter (1992)	Information seeking	Objective property of information itself
Hilligoss & Rieh (2007)	Information seeking	Reliability, unbiasedness, accuracy, fairness and objectivity
Johnson, Rowley & Sbaffi (2015)	Health information	Information is believable, impartial, has quality and is factual rather than reflecting opinions
Lim & Simon (2011)	Credibility of Wikipedia	Peripheral clues Peer endorsement
Meyer (2003)	Oral tradition	Elderly people as knowledge repository Knowledge channelled through headman Group opinion Authority figure opinion Situational frame of reference
Miyamori *et al*. (2008)	Current affairs and health	Content Sender Appearance Social valuation
Shen, Chiou & Kuo (2011)	Online auction sites	Seller reputation Product condition Argument quality

Table 2.3 Criteria for credibility assessment as depicted from different sources

As can be seen from Table 2.3 and the preceding discussion, different authors use various approaches in diverse contexts for assessing the credibility of information.

The next section will move the focus from actual credibility to perceptions of information's credibility.

2.4.2 Perception of information credibility

Broadly speaking, studies of information credibility have to do with the interplay between the credibility of the content versus the perceptions created by the peripheral clues and media use (Petty & Cacioppo, 1986:132). It will be noticed in this section that very few studies

focus solely on information credibility or solely on perception of information credibility. Thus while the studies discussed here predominantly deal with perception of information credibility, the line might appear blurred at times.

Flanagin and Metzger (2008) trace the historical development of the study of information credibility through four stages. In the days of Aristotle the credibility of the source (the orator himself) was synonymous with the perceived credibility of the information. In response to propaganda during the World Wars, attention shifted to include the credibility of the message as well. With the popularity of television the effect of the information channel on perceptions of credibility came into the spotlight. Since the 1990s and the advent of the internet, the roles of all three (source, message and medium) in ascertaining the credibility of information have of necessity been fused into one. Savolainen's (2011) work on discussion forums is a good example of this and is visually illustrated by Johnson and Case's (2012:12) three-dimensional information carrier matrix with facets of channels, sources and messages.

Tseng and Fogg (1999) propose four types of credibility perceptions: Presumed credibility is based on cultural presuppositions associated with the individual (stereotyping is typical of this sort of credibility assessment.) Reputed credibility is based on the endorsement of third parties. Surface credibility is based on superficial characteristics of information. Experienced credibility develops over time based on one's interaction with a source of information.

The creator of information needs to get the information seeker to perceive that the information is credible and thus it is relevant to mention Petty and Cacioppo's (1986) use of the Elaboration Likelihood Model in the context of psychology. They use this model to analyse the effectiveness of communication to persuade people to change their opinions. Lasting persuasion is based on attention to the content. Peripheral clues influence seekers who are not as focused and motivated. Richardson *et al.* (2013) deliberately experimented with the use of peripheral clues to make their message to adolescents more effective. The issue of motivation of the information seeker has been addressed in Section 2.3, on risk.

The Elaboration Likelihood Model concurs with the findings of Hovland and Kelley (1953) that there are two key dimensions to perceptions of credibility: trustworthiness of the actual information and expertise of the source. Johnson and Case (2012) refer to a three-dimensional information carrier matrix with facets of channels, sources and messages. In this case the message corresponds to the actual information, while the channels and sources are to do with the origin and delivery of the information. These components together contribute to the perception of credibility.

Similarly, Wathen and Burkell (2002) propose that the first step in assessing credibility is from peripheral clues and thereafter the second stage involves the source and content. They categorise message credibility perceptions into:

- Source characteristics (expertise and trustworthiness)
- Message characteristics (plausibility, internal consistency, quality)
- Receiver characteristics (cultural background, previous beliefs).

Rieh (2002) finds that people must first make a predictive judgement about the information source to decide whether it is worthwhile to proceed. Once they have collected the information, they then make evaluative judgements on whether they perceive it to be credible or not. The factors then used to determine the quality and authority of the information are:

- Characteristics of information objects – content, graphics, structure and type
- Characteristics of sources – the type of organisation and its reputation
- Knowledge – first-hand or second-hand knowledge
- Situation – context of the search
- Ranking in search output.

Numerous checklists have been put forward to assess the credibility of information on web sites. These generally incorporate identifying the author or originating organisation, evaluating the author's qualifications and possible motives, establishing how current the site is and finally looking for clues to sloppy design (Agosto, 2002; Brandt, 1996; Flanagin & Metzger, 2000). While these are often considered to be measures of the credibility of the information, they are in fact merely measures of the information seeker's perception of credibility, as they focus on Petty and Cacioppo's (1986) peripheral clues rather than the content.

As was discussed in the previous section, two of Gunter's (1992) criteria affecting information credibility were the stable innate disposition of the receiver to trust or distrust generally and the perception of the receiver uniquely based on the specific context of the search. He also found that perceptions of information credibility were not as dependent on the source as on the actual content. Flanagin and Metzger's (2000) study verified this for all their media types (television, radio, magazines, the internet), except that it did not hold for newspapers. (Note these are information channels and not information in general.) In their study, newspaper-based information was perceived as more credible than the other media but within the other media, there was no difference in the perceptions of credibility

irrespective of the information each contained. They raised a note of concern in this regard, as the internet is the least editorially accountable information channel and should possibly be regarded as least credible.

Flanagin and Metzger (2000) mention the need for more studies on the channel versus content problem in order to assess perceptions of information credibility. Fogg *et al.* (2002) with their large online survey did study the problem of channel versus content in the context of the internet. There is a need to expand Fogg *et al.*'s (2002) findings to cover more than just the internet and to include other sources used by pupils to search for information.

Hilligoss and Rieh (2007) find that credibility judgements are one of three types: constructs, heuristics and interaction with content. The constructs refer to the information seeker's own perceptions and definitions of credibility. Heuristics are the rules of thumb used to assess credibility. Interaction includes the actual content of the information as well as peripheral clues.

Johnson and Kaye (2002) examine whether politically interested internet users view internet sources as credible and whether reliance on the internet, reliance on traditional sources, the convenience of using the internet, or political and demographic variables predict credibility perceptions of online media. Johnson *et al.* (2007) did a similar study on perceptions of blogs.

Fogg *et al.* (2002:85) propose what they call the Prominence-Interpretation Theory, which has relevance to this study of credibility perception. According to them the credibility impact of information is a product of an elements' likelihood of being noticed (prominence) and the value the seeker ascribes to that element (interpretation). This process is ongoing and iterative as the credibility of a web site is assessed. Fogg *et al.* summarise the theory as follows:

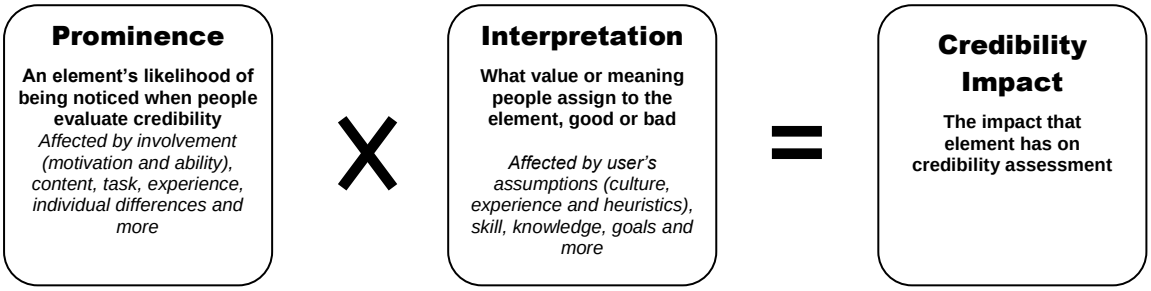


Figure 2.10 Prominence-interpretation model of credibility impact (Fogg *et al*, 2002:85)

A slightly different perspective on the perception of credibility is highlighted by Whitmire (2003). Her study of fourth-year undergraduate students is concerned with Kuhlthau's (1988) Information Search Process, of which Stage 3 is the Prefocus Exploration. At this stage information seekers investigate information on a topic in order to gain personal understanding and to fit this knowledge into their existing knowledge structures. Kuhlthau (1988) found that this was the most difficult stage, as often the information the students found was not consistent with their existing knowledge structures. This would correspond to Rieh's (2002) predictive judgement. These three studies have a serious implication for this study in that they show perceptions of credibility are shaped by the existing knowledge (or lack of it) of the seeker. In a school context – particularly an under-resourced school – this could have a significant effect on perceptions of credibility of information. Table 2.4 lists studies relating to credibility with the criteria they each consider.

Study	Context	Criteria for credibility perceptions assessment
Agosto (2002), Flanagin & Metzger (2000), Brandt (1996)	Credibility checklists	Author Originating organisation Author's qualifications Motives of the source Currency Sloppy design Concurrence with other sources Availability of contact details Completeness Official stamp Factual vs. viewpoint information
Fogg *et al.* (2002)	Credibility of web sites	Prominence Interpretation
Francke & Sundin (2012)	Credibility of Wikipedia	Stability of the source External consistency Situational Democratic
Genuis (2012)	Health information	Experience Social context Information consistency Complementary sources
Giovannini *et al*. (2015)	Mobile commerce	Trust of the technology Trust the entity deploying the information Willingness to be vulnerable
Gunter (1992)	Information searches	Disposition of the receiver Context
Hilligoss & Rieh (2007)	Credibility of web sites	Constructs Heuristics Interaction with content
Hovland & Kelley (1953)	Information searches	Trustworthiness of content Expertise of the source

Study	Context	Criteria for credibility perceptions assessment
Johnson and Kaye (2002)	Politically interested internet users	Reliance on the internet Reliance on traditional sources Convenience Political and demographic variables
Kim, Park & Bozeman (2011)	Online health information	Aesthetics Peripheral clues Message credibility
Petty & Cacioppo (1986)	Elaboration Likelihood Model – psychology persuasion theory	Central route Peripheral clues
Rieh (2002)	Information searches	Predictive judgement Evaluative judgements Characteristics of information objects Characteristics of sources Knowledge Situation Ranking in search output
Savolainen (2007b)	Environmental activists	Media credibility Cognitive authority
Wathen & Burkell (2002)	Information searches	Source characteristics Message characteristics Receiver characteristics
Whitmire (2003), Kuhlthau (1988)	Information searches	How it fits their existing knowledge structures

Table 2.4 Credibility perceptions criteria reported in the subject literature

From the discussion and the summary table, the factors of most interest to credibility perceptions are the references to issues that relate to an information seeker's context, Wathen and Burkell (2002) and Gunter's (2002) receiver characteristics and Whitmire (2003) and Kuhlthau's (1988) attention to how new information fits previous knowledge structures. These are aptly summarised by Wathen and Burkell's (2002) source, message and receiver characteristics.

2.4.3 Summary of useful issues noted from findings of studies on credibility and perceptions of credibility

Sections 2.4.1 – 2.4.2.highlight important issues from the studies on information credibility and perceptions of information credibility.

An apparent gap in research appears to be studies of the context of the information search which, while it is regularly mentioned, does not appear to be given much attention. Not only is assessing information credibility in context important, but in Wilson's (1999) model of information seeking developed in 1997, the context of the seeker and context of the

information need are both important. Wilson also emphasises the role of risk/reward in information behaviour, which was covered in the discussion of trust. Empirical research into information credibility appears to ignore this as a contributing factor.

Much has also been written on analysing the credibility of information from various viewpoints, but very little on the application of this to seeking solutions to shortcomings in the education environment. These studies hold much potential to add rich insight once data has been empirically collected for this study.

This literature analysis informed decisions on data collection and the scope of the empirical study. It also informed suggestions for interventions in education to address differences between pupil information behaviour and that expected of professional information workers (see Section 3.4.3).

2.5 FOUR STUDIES INFORMING THE RESEARCH DESIGN

From the literature review four studies were selected as of particular importance to inform the research design for this study. These include those of Flanagin and Metzger (2000), Madden, Ford and Miller (2007), Rieh and Hilligoss (2008) and Agosto (2002). These are all older studies. They were, however, important at the time when the planning of the study started (2009), and if checked against more recent studies such as those of Giovanini *et al.* (2015) and Johnson, Rowley and Sbaffi (2015), they still hold value. This section will briefly highlight how they each contributed to establishing a foundation on which to build this study and influenced decisions. The next Section, 2.6, will build on this by aligning the research questions of this study to the literature.

Flanagin and Metzger's (2000) study has much value for the goals of this study. They measured the perceived credibility of newspapers, radio, television, magazines and the internet. This is in fact assessing information channels. They check these information channels across different types of information – news, reference, entertainment and commercial. The relevance of Flanagin and Metzger's (2000) work for this study is their finding that perceptions of information channel credibility varied with the type of information being sought. This issue was also addressed in the questionnaire for this study (see Appendix A).

Madden, Ford and Miller (2007) studied information-seeking behaviour of English high school pupils. They got pupils to rank a list of information sources as to their usefulness for

school work. Later in the year they did a follow-up study where they compared the pupils' perceptions with what actually transpired. The second portion of their study is of relevance because it recorded pupils' actual use of resources, so the study is not restricted to perceptions of usefulness. While their study is specifically focused on pupils' perceptions of information usefulness, this study has the same target group but focuses on perceptions of information channel credibility. Their methodology is useful. In the first part of the study, they got pupils to rank sources without actually requiring them to do any information seeking. This circumnavigates a problem possibly found in some studies, where results could be influenced by pupils' lack of involvement, satisficing, or taking the easiest route. This influenced the choice of data capture in the questionnaire (see Appendix A and discussion in Section 4.4). Of interest in their findings was that there was no observable overall trend in the choice of information source but that it was dependent on the subject on which the pupil was working.

Rieh and Hilligoss (2008) conducted an exploratory study of undergraduate students' information credibility assessment. They requested students to record one information seeking activity per day for 10 days. They then followed this up with an interview probing their credibility assessments. Thus their study was open-ended in the sense that the context and source of information were not prescribed. One of the findings was that when students were looking for information on finance and health their attention to the information's credibility was much greater than when researching entertainment information. This justifies the coupling of risk assessment to information channel credibility perceptions and on the basis of this pupils were asked to assess the perceived risk for various scenarios in the questionnaire (Appendix A). Rieh and Hilligoss (2008) distinguish the types of judgments of information: predictive, evaluative and sometimes verification. The distinction of judgment is useful because the current study will focus on predictive judgment. Of use to inform educational interventions are their findings of stratagems used by students as a starting place for information searches: starting from a trusted place, starting with many sources and cross-referencing them and compromising credibility for speed and convenience.

Agosto's (2002) study was specifically on pupils' choice of web sites, but the model that results from her empirical work has potential to be applied more generally to information channel credibility. The model asserts that the choice of the information source is based on the interaction between four components: personal preferences, object engagement, human processing constraints and contextual constraints.

2.6 ALIGNING THE STUDY'S RESEARCH QUESTION AND SUB-QUESTIONS TO FINDINGS FROM THE LITERATURE

Discussion in this chapter has thrown light on the research question and a number of sub-questions raised in Chapter 1. Some of these have been included in the questionnaire for data collection. The contribution of this chapter to addressing the sub-questions is briefly reflected in the following paragraphs.

1. **What has been reported on perceptions of information credibility and information channel credibility?**
    - **School pupils**
    - **Students and adults**
    - **Professionals in information-intensive environments**

There are two groupings of factors influencing information channel credibility: content credibility and peripheral factors. These are summarised in Table 2.3 and 2.4.

- Content quality is assessed on the one hand by the check-list approach, covering factors such as believability, accuracy, trustworthiness, bias and completeness (Flanagin & Metzger, 2000). The other approach for content evaluation is to look at authors' qualifications, originating organisations' credibility, editorial policy, etc. (Johnson, Rowley & Sbaffi, 2015)
- Peripheral factors have nothing to do with the actual quality of the content but contribute to the perceptions of credibility. The disposition of the receiver (Gunter, 1992), the ranking in search output (Rieh, 2002), the motives of the site, currency of information, sloppy design and how the information fits with the information seeker's existing knowledge base (Whitmire, 2003) all contribute to the perceptions of the credibility of the information. The age of the pupil was found to influence perceptions about the information channel (Madden, Ford & Miller, 2007). Risk perception is a contributing factor to the trust relationship (Mayer, Davis & Schoorman, 1995). The trend in preference for people as sources of information (Case, 2012) is overshadowed by preference for the internet in other studies (Biddix, Chung & Park, 2011; Holtgrafe & Zentes, 2012; Metzger & Flanagin, 2013).

More specifically in Chapter 1, it was reported that studies found that while pupils knew how to evaluate the credibility of information, they did not do it formally. Some of these studies noted a preference for interpersonal sources of information, while others noted a shift by young people towards the internet as their most credible information channel.

Adults were found to be more aware of credibility issues than children. They, however, often used their experience of a topic in order to evaluate the credibility of information intuitively. They too chose a combination of interpersonal and internet channels as the preferred place to obtain information. Choice of channels was situational and dependent on information need; this choice was often motivated by convenience and familiarity.

Adults in information-intensive professions will be discussed in Section 3.4.3.

2. **How can trust models guide a study of pupils' perceptions of information channel credibility?**

Trust models indicate the role of risk, credibility, feedback and context as being fundamental to trusting behaviour (Abdul-Rahman & Hailes, 1997; Giovannini *et al*., 2015; Johnson, Rowley & Sbaffi, 2015; Mayer, Davis & Schoorman, 1995; Marsh, 1994; Marsh & Dibben, 2003). Empirical testing of credibility perceptions is lacking with respect to applying trust theory and thus there is an opportunity to add to this field.

3. **What factors influence school pupils' perceptions of information channel credibility?**

Studies of trust were found to relate to those of trustworthiness and credibility. It was found that the following are key factors influencing perceptions of information channel credibility:

- the context in which the information need arises (Francke & Sundin, 2012; Gunter, 1992)
- the risk associated with incorrect information (Giovannini *et al*., 2015; Mayer, Davis & Schoorman, 1995)
- the experience of the information seeker (Flanagin & Metzger, 2000; Genuis, 2012).

4. **What school-based interventions could be recommended to address the shortcomings in the perceptions of pupils that can prepare them to meet the information requirements of adulthood?**

Already certain interventions are being suggested from the studies covered thus far:

- Artificial imposition of risk in assignments: The role of risk, while prominent in trust theory, has not been discussed with respect to information channel credibility. Risk is

not inherent in an imposed school task so it would have to be imposed in the form of serious loss of marks or redoing of an assignment if a pupil retrieves information of low quality.

- Different types of information require different levels of credibility checks; very little attention has been paid to the context of the information needs of pupils. In some factual contexts it would be inappropriate to expend cognitive effort in assessing the credibility of the information, while in multi-facetted topics, topics where currency is important or controversial topics it is essential (Bowler, 2010c; Duffy, Liying & Ong, 2010; Francke & Sundin, 2012; Gasser *et al.*, 2012; Leckie, Pettigrew & Sylvain, 1996).
- Setting metacognitive tasks: The use of experience by adults in assessing credibility cropped up a number of times. Since experience cannot be taught, a possible educational intervention could be to set metacognition tasks where pupils compare information sources rather than simply finding information. The tasks would thus require pupils to think about their thinking – to assess the source rather than the content (Bowler, 2010b).

2.7 CONCLUSION

This chapter has covered a discussion of trust, risk and credibility. It has been found that in order for trusting behaviour to take place, the trustor has to accept the associated risk and the trustee must display sufficient credibility. There appears to be a gap in the literature as far as linking of trust theory and information behaviour is concerned.

Credibility is either seen as pertaining to the actual trustworthiness of the content or else as the perception of the trustworthiness of the information (or the channel through which it is accessed). The context in which credibility assessment occurs also appears to be neglected in the literature. Risk is seen as a function of the probability of incorrect information and the cost of using that information.

Trust, credibility and risk will form the foundation informing the research design in Chapter 4. The next chapter will address the context and media through which school pupils access information.

CHAPTER 3

CONTEXTS FOR PERCEPTIONS OF INFORMATION CREDIBILITY

3.1 INTRODUCTION

In studying literature on information credibility it has become evident that the context within which the information need arises is fundamental to perceptions of its credibility. It is because of this importance of context (Järvelin & Ingwersen, 2004) that this chapter covers context. The research questions involve focus on school pupils, students and adults as well as people in information intensive professions and to ascertaining the factors influencing their perceptions of information channel credibility. It is thus relevant to study the effects of the context within which information assessment is located.

In Chapter 2, the topic of context was mostly only superficially reported on in the research covered. In Chapter 3 the focus will be specifically on context and studies reporting on the impact of context with a view to assessing its effect on perceptions of information channel credibility. Context has previously been encountered in Mayer, Davis and Schoorman's (1995) trust model, where it functioned as the enveloping background within which the trust relationship and trust behaviour take place (see Section 2.2.2, Figure 2.3). In information seeking, Flanagin and Metzger (2000) note that the context of the internet is too broad an information channel to be grouped into one. In schools Gross (1999:503) notes, without explicitly referring to it as differing contexts, the difference between imposed tasks and self-generated searches. In covering media credibility Flanagin and Metzger (2000) find differing perceptions when the participants in their study find themselves in the differing contexts of leisure and current affairs-politics. In addition to this, there is the context of interpersonal information sharing, which is referred to as informal channels by Spink and Cole (2001) or information grounds by Fisher *et al*. (2005). Similarly, in the specific contexts of various information-intensive professions, e.g. journalism, law and medical science, they have their own codes of ethics regarding the use of information and assessing information credibility. This regular appearance of the topic of "context" in the work on information credibility points to a need to explore the concept more formally.

This chapter will begin by looking at the role of context as it relates to information behaviour, drawing from the various authors who explore the concept of context in some detail. A three-

dimensional matrix influenced by the work of Courtright (2007) and Johnson (2009) will be presented to represent the possible contexts in which high school pupils can find themselves while accessing information. The components of this matrix will then be dismantled, analysed individually and mapped against selected empirical studies. These empirical studies reported in the subject literature, which have already been discussed in Chapters 1 and 2, will be positioned in their respective co-ordinates within the matrix.

Finally, methods used by information-intensive professions to ascertain information credibility in various contexts will be covered. The purpose of this is to contextualise information credibility in the world into which the pupils will be moving (Walraven, Brand-Gruwel & Boshuizen, 2009).

An observation from the literature analysis of trust, risk and credibility in Chapter 2 was the occasional reference to context with respect to information behaviour. This chapter will focus on context in order to provide more detail to this facet. It will also give relevant background to the research question seeking to establish the factors affecting pupils' perceptions of information channel credibility.

3.2 THE ROLE OF CONTEXT IN INFORMATION BEHAVIOUR

While the context of information needs was not the focus of any of the authors referred to in Chapter 2, it appears to warrant more attention than it has been afforded.

Courtright's (2007) review of context covers information behaviour in general and is thus not specific to information credibility. However, it is relevant to cover context in general in order to be able to apply it later to the focus of this study. Courtright's review also provides a relevant framework from which to study context. In broad terms, she finds that context can be seen from two perspectives. It can be seen as a backdrop against which information activity takes place. In this case, the context is described in detail at the beginning of a study and then information behaviour is analysed in that context but not in relation to its interaction with that particular context. The other perspective she describes is in line with a recent trend of more user-centred analysis of context observed in the literature. In this case contextual elements are explicitly linked to information behaviour and hence the interaction between the two is able to explain variability.

Wilson's (1997) general model of information behaviour differentiates between the context of the individual (person-in-context) and the context of the information need. He then also

studies the barriers or what he later calls intervening variables, which affect information seeking.

In the remainder of this section, context will be discussed under the headings identified by Courtright (2007), namely bounded context and factors of context; by Dervin (1997), namely context as a container, person-in-context; and by Johnson (2003), namely social context, relational context and changing context.

3.2.1 Bounded context

Courtright (2007) finds that contexts can be bounded by the organisations within which information seekers operate, whereas in everyday activities the context tends to be less bounded. Chatman (1996), in researching information-poor societies (outsiders), found the members to be bounded not only geographically but also in a limited world-view of hostility towards outsiders. Barnes, Spink and Yeates (1997) found that high-performance work teams used a wider range of information sources than low-performance teams. Rieh and Hilligoss (2008) refer to bounding where certain information sources are regarded as credible by students because of the endorsement of the lecturer. These are regarded as credible for the narrow purpose of a certain class context and not necessarily credible in a wider context.

3.2.2 Factors shaping context

Courtright (2007) identifies a number of factors which are found to shape context, namely rules and resources of a particular organisation, culture, social networks, social norms, collaborative requirement in workplace, the task at hand, work domain and human activity.

Courtright (2007) notes that in the user-centred approach to context, some of the factors would be viewed as instrumental in the research rather than as factors of the context. Thus the factors shaping the context can be seen as simply other variables needing to be analysed in relation to the phenomenon of interest.

Dervin (1997) gives a number of illustrations of context and the one possibly most representative of this study (referred to as picture 9 in her work) is shown in Figure 3.1.

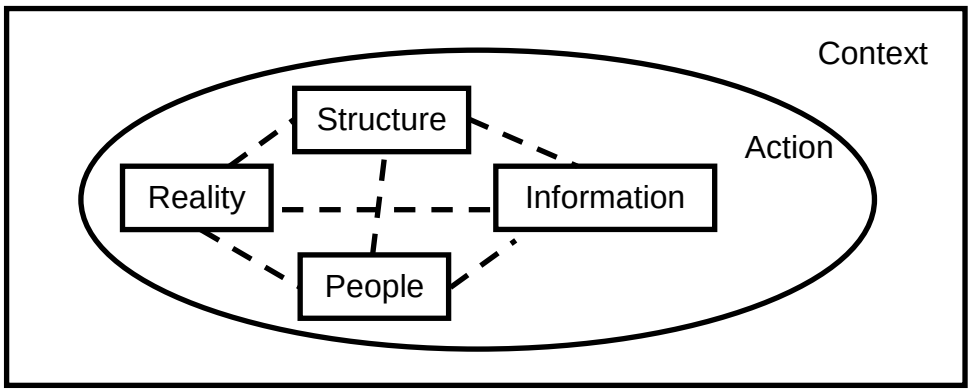


Figure 3.1 Dervin's (1997) illustration of context – Picture 9

In this perspective, structures, reality, information, and persons become but instances of actions and practices which characterise contexts. The dotted joining lines represent connections.

3.2.3 Context as a container

Dervin's (1997) work on context comprehensively covers many perspectives on the topic but for the purpose of this study her description of the "context as a container model", covering anything other than the phenomenon of interest is pertinent. Since these factors are distinct from the phenomenon of interest, they are thus objectively observable. Courtright (2007) notes that the implication of this is that all the factors in the setting are seen as input variables whose influence on the phenomenon of interest is available to be analysed. This would imply that a choice needs to be made by the researcher as to whether factors are instrumental or contextual (Courtright, 2007).

3.2.4 Person-in-context

A user-centred approach identified by Courtright (2007) in studies of context describes the surroundings that facilitate understanding of human behaviour as the person-in-context. This is different from the context as a container in that the context is now seen from the perspective of the person seeking the information rather that objective factors in the background.

Wilson (1981) presents an "information needs and seeking" model for the person-in-context. This is shown in Figure 3.2

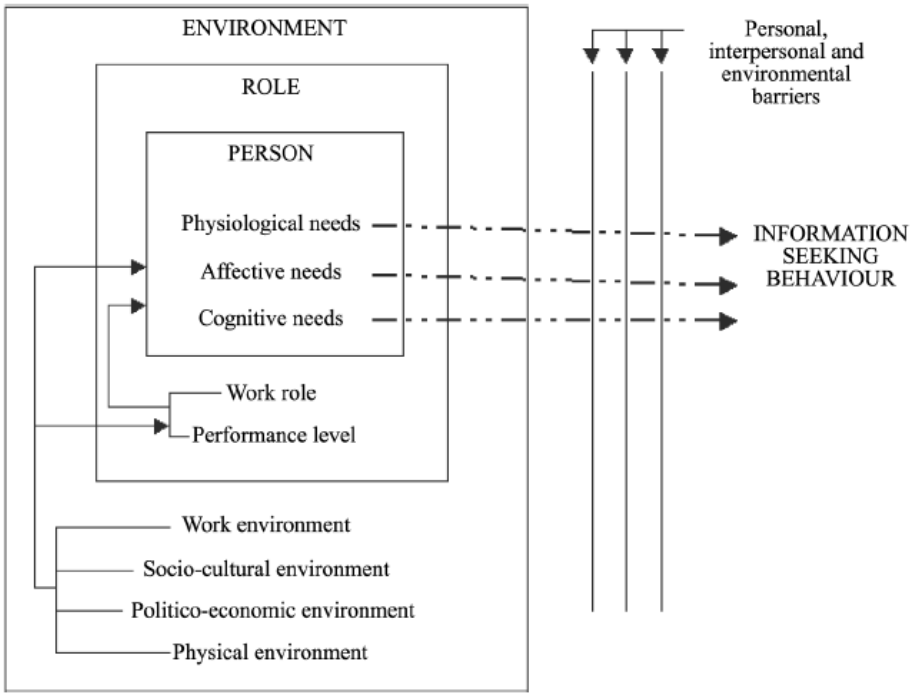


Figure 3.2 Wilson's (1981:6) information needs and seeking model

This model could be looked at in a different way where the person is depicted as the centre of concentric rings of physiological, affective and cognitive needs. There are then the roles of work or leisure in which the rings are situated, as are the socio-cultural, politico-economic and physical environments. In Figure 3.3 the components of Wilson's (1981) model are reassembled into an adapted layout showing the inter-relationship of the components.

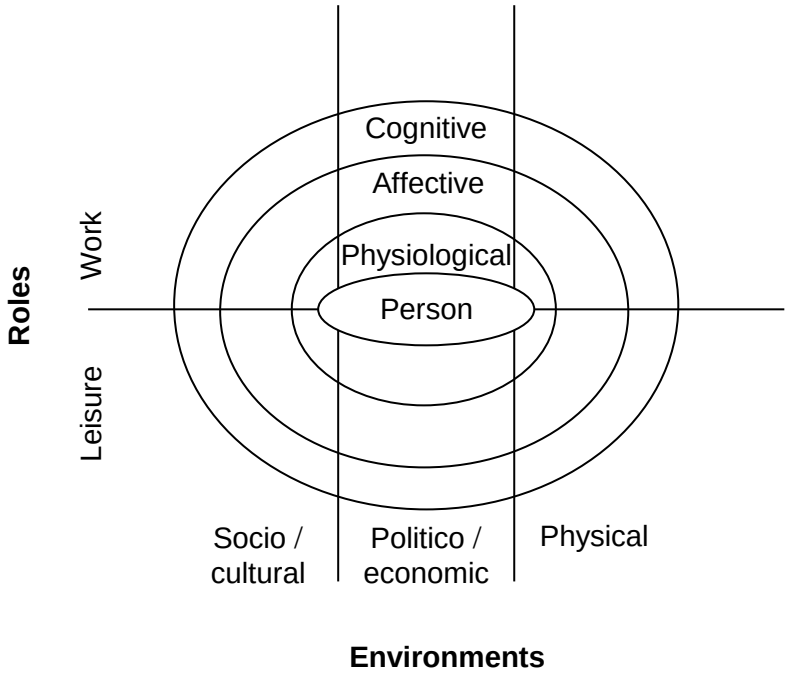


Figure 3.3 Diagrammatic adapted representation of Wilson's model (1981)

Another approach to the person-in-context is taken by Johnson (2009) where he describes a context that is not independent of the information user. He illustrates context as a set of axes. On the vertical axis he places the individual's motivation as regards the information. This ranges from a drive to acquire information at the top down to active avoidance of information at the bottom. On the horizontal axis he maps the individual's relationship to the information carrier, with accidental information acquisition on the left and purposive seeking of information on the right.

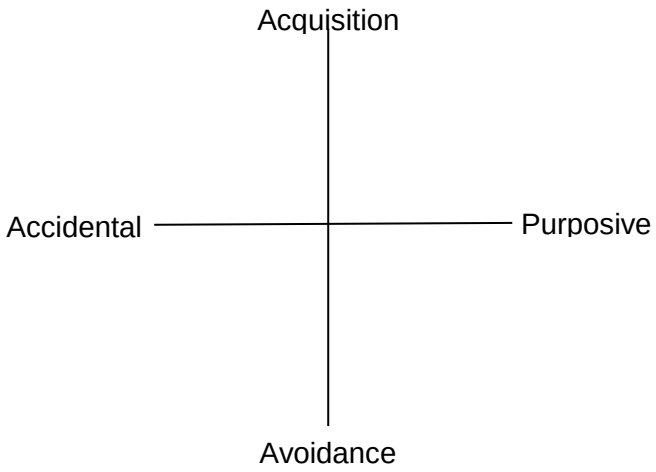


Figure 3.4 Johnson's (2009:594) axes for mapping information behaviour

He notes that most studies of information behaviour have been undertaken in structured environments such as libraries where information seeking tends to be clear and purposive, thus falling in the top right-hand quadrant of the diagram. He points out that to understand context in information behaviour better, studies will need to cover the other quadrants as well. Information avoidance would occur when individuals do not want to know what they might perceive to be bad news, for example a medical condition or possibly information that is counter to their political stand-point (Case *et al.,* 2005; Wilson, 1997). Accidental information acquisition occurs when the individual gets information without actually looking for it, as would happen while watching television, for instance.

Another case of interaction between the information user and the context was covered in Chapter 2, on trust. Marsh and Dibben (2003) see the trustor having three types of trust, which can be seen as concentric layers: dispositional trust, learned trust and situational trust. What is relevant in this chapter on context is the situational layer, which corresponds to trust that is dependent on the prevailing situation. This is the trust that is specific to a given situation and context as opposed to inherent trust of a trustor or trust derived from the trustors' past experience. They also refer to the context of despair where trust occurs only because the trustor sees no other option (Glenton, Nilsen & Carlsen, 2006). Johnson (2003) approaches context from the social, relational and dynamic aspects and these will be discussed in Sections 3.2.5 – 3.2.7.

3.2.5 Social context

Courtright (2007) refers to information actors as social beings who create meaning through their social interaction. This approach goes beyond treating the social influence as a contributing factor, rather seeing an individual as having internalised the knowledge, characteristics, expectations and norms of the social community in which he/she exists.

Savolainen (1995) compared the information behaviour of a working class group with that of a group of professionals. The justification for doing this was that the focus of his study was non-work information seeking and his literature research indicated that there would be significant differences between these groups in terms of their order of things (way of life).

Burnett and Jaeger (2008) and Chatman (1996) cover social context as it relates to isolated information-impoverished groups. Agosto and Hughes-Hassell (2005) emphasise the importance of a social context to urban teenagers. Dervin's (1997) context as a container covered in Section 3.2.3 would also correspond to social context.

3.2.6 Relational context

Courtright (2007) finds that the information actor is embedded in the context. There is a relational interplay between the actor and the components of the context: social, institutional and technological.

3.2.7 Dynamic context

Johnson's (2003) third factor relates to the effect actors have in actually shaping their own context. He examines the effect of major frameworks on "interaction that shape[s] interpretation and sense making." (Johnson, 2003: 751). The human and non-human components shape and are shaped by each other.

Toivonen, Lenzini and Uusitalo (2006) considered time as a component of context because both reputation and recommendations originate at a specific time (or over a specific time period) that is not necessarily the same time as when the event requiring trust between trustor and trustee is occurring.

Niedźwiedzka (2003) expands on the dynamic cyclical nature of context in Wilson's (1981) information behaviour model. Information once obtained becomes a knowledge component, which in turn shapes the individual as a person-in-context. This is the context in which future information needs occur and thus the cycle continues.

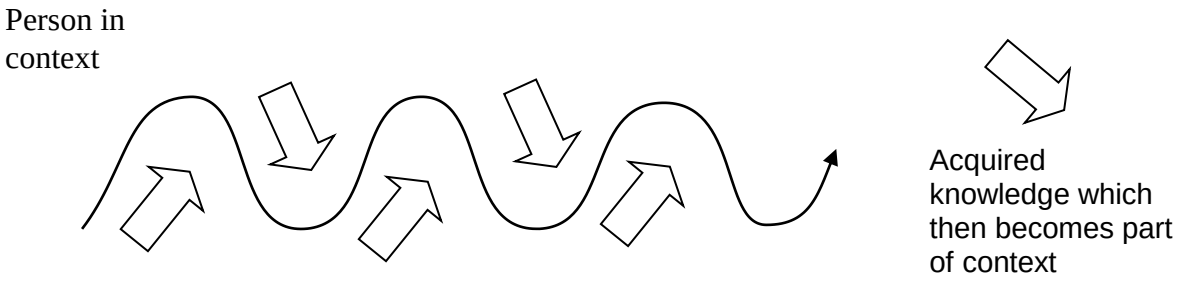


Figure 3.5 Illustration of cyclical nature of context (based on the work of Niedźwiedzka, 2003)

Figure 3.5 illustrates how context is shaped over time by acquiring knowledge, which in turn becomes part of the context in Niedźwiedzka's (2003) interpretation of Wilson's (1981) model of information behaviour.

3.2.8 Synopsis of views on context in information behaviour

Wilson (1997) noted the need to distinguish between the person-in-context and the context of the information behaviour itself. The person can be the focus of attention – person-in-context (Wilson, 1981,1997) – or else one can study the context itself separately as a container within which the person operates (Dervin, 1997). Giovanini *et al.* (2015) studied commerce via mobile devices, including technology/hardware, as another component of the container. Various studies adopt different approaches to considering each of these two aspects.

When considering the context of the information itself, Johnson (2009) places the context on a Cartesian plane with the one continuum ranging from passive or accidental assimilation of information through to purposive finding of information, while on the other axis is measured from avoiding information through to actively acquiring information.

Figure 3.6 illustrates the two streams of thought with respect to the context of information behaviour. This will then be applied specifically to high school pupils in Section 3.3 and Figure 3.7.

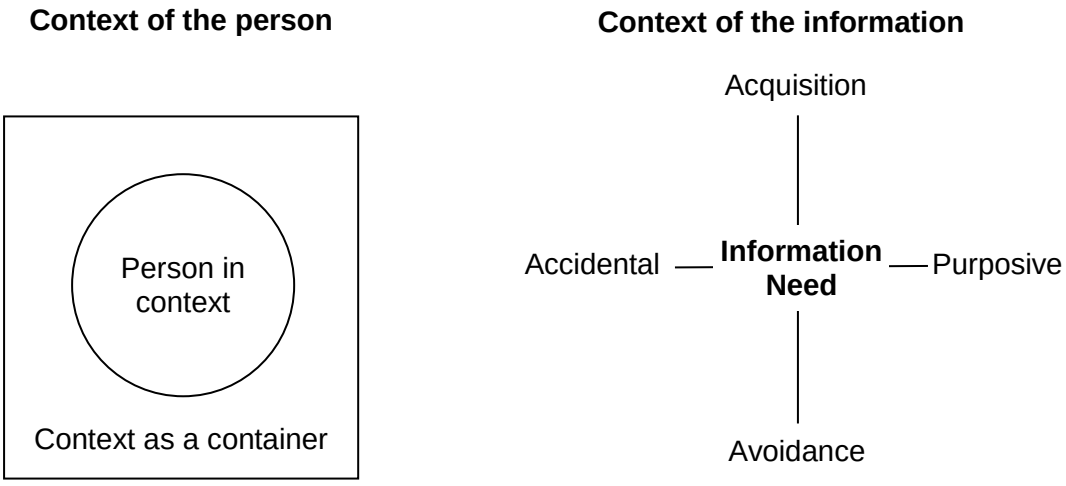


Figure 3.6 Juxtapositioning the context of a person with that of information

The user-centred approach highlighted by Courtright (2007) sees the context of the person and the context of the information as interactive elements rather than a fixed background against which the relevant activity takes place. The net effect of this is that factors previously discussed as contributing to perceptions of information channel credibility can now be regarded as dynamic components of the context.

3.3 APPLICATION OF CONTEXT TO HIGH SCHOOL PUPILS

The discussion of context provides a rich basis from which to start applying the conceptualisations of context in information behaviour to high school pupils.

Beginning with the pupil in context, the concept of bounded context (Courtright, 2007) is applicable. Schools are organisations with their own set of rules and standard practices and thus can be observed as distinct contexts. In the same way Dervin's (1997) context as a container is applicable to the context within which school pupils operate. The factors shaping context can then be observed independently. In the differing school contexts, the different means of access to information channels through which information is obtained should be assessed. Schools can be selected so as to give a broad spectrum of exposure to information channels, the internet in particular, and measuring this will enable its effect to be assessed. As will be discussed, the information channel through which information is accessed can also be regarded as part of the context of information and thus will be illustrated as emanating from the context of both the person and the information.

The type of information sought by pupils would also be a function of the context surrounding the person. Johnson's (2003) social, relational and dynamic components of context would affect the type of information in which a high school pupil would be interested. Meyers, Fisher and Marcoux's (2007) study of pre-teenagers corroborates this, as does Agosto and Hughes-Hassell's (2005) research on urban youth.

The horizontal axis of Johnson's (2009) model provides a good starting point when considering the context of the information with respect to high school pupils. It is a continuum from accidental acquisition of information on the one end to purposive seeking of information on the other. Accidental acquisition relates to Wilson's (1997,1999) passive information seeking and Fischer *et al*.'s (2005) information grounds, Courtright's (2007) undirected or semi-directed browsing, Makri and Blandford's (2012) serendipitous finding of information as well as Erdelez's (1997) and Agusta's (2010) information encountering. Onto this spectrum of passive to purposive information acquisition it would be useful to superimpose various information channels. Certain information channels are suited to the accidental passive accumulation of background knowledge on a topic (e.g. newspapers and television), while others are good at catering for purposive acquisition of specific information (e.g. the internet and reference books.) There are many possible information channels, as is evidenced by the reviews by Case (2007, 2012), Fisher and Julien (2009) and articles cited earlier. In order to focus this research, the choice will be narrowed down to the media

information channels researched by Flanagin and Metzger (2000), i.e. newspapers, magazines, radio, television and the internet. Even though Flanagin and Metzger (2000) point out how broad the internet is, for the purpose of this study it will be taken as a single channel. The reason for this decision is that the study is targeted at a spread of pupils from adept internet users right through to those who effectively have no access. Including all the facets of the internet would have limited applicability. In the case of school pupils' information needs it will be necessary to include the option of books and interpersonal information seeking (Madden, Ford & Miller, 2007).This will give good coverage of the continuum applicable to high school pupils. From the above it would be appropriate to select INTERNET, PRINT MATERIAL, MASS MEDIA and INTERPERSONAL information channels as the overarching options for this study, with the option of subdividing any of them if necessary.

Studies researching pupil information behaviour appear to choose information needs that are imposed (e.g. Agosto, 2002; Madden, Ford & Miller, 2007; Walraven, Brand-Gruwel & Boshuizen, 2009), while self-generated tasks appear to be under-studied. There are examples of studies of adults where self-generated needs are researched (Helligoss & Rieh, 2007; Metzger, Flanagin & Zwarun, 2003; Savolainen, 1995; Savolainen & Kari, 2004). Some pupil studies, particularly those that observe information behaviour, differentiate between imposed and self-generated tasks (e.g. Gross, 1999; Shenton & Dixon, 2004). Figure 3.3, illustrating Wilson's (1981) information seeking model, also gives a good basis for researching the school context. The adult roles he identifies as leisure and work would map very aptly to self-generated tasks and imposed tasks when applied to the school context. This could correlate with Johnson's (2009) vertical axis of acquisition of information versus avoidance of information. However, for the purposes of this study the avoidance part of the axis will be set aside, since whether the task is self-generated or imposed, the pupil will still need to respond as if there is a need to acquire the information. From this, it would appear to be appropriate to use IMPOSED and SELF-GENERATED tasks as categories to describe the origin of the information need.

Wilson's (1981) socio-cultural, politico-economic and physical environments partially correspond with Metzger, Flanagin and Zwarun's (2003) reference, leisure (which may include physical), current-affairs and commercial categories. The socio-cultural category would encompass current affairs and leisure topics/information needs, while the politico-economic would cover current affairs as well as commercial topics/information needs. The categories can be used to understand the contexts within which school pupils' information needs occur better. The research specific to school children covered thus far has tended not

to specify what categories the children should research, but rather observed what the children were actually doing (Gross, 1999; Madden, Ford & Miller, 2007; Shenton & Dixon, 2004). There were, however, certain studies that used categories of science and technology, current affairs, language and culture (Agosto, 2002; Flanagan & Gallay, 2008). These would correspond to reference and current affairs. Summarising the above, it would appear to be appropriate to select REFERENCE, COMMERCIAL, LEISURE and CURRENT AFFAIRS as a relevant covering of types of information that could be searched for by high school pupils.

The issue that now needs to be clarified is whether the factors discussed are in fact context or input variables. It must firstly be stated clearly that the phenomenon of interest in this study is high school pupils' perceptions of information channel credibility. One could define a long list of background characteristics of high school pupils and hold them constant while focusing on the phenomenon of interest. Alternatively, using the current trend of a user-centred approach (Courtright, 2007), the factors identified in Chapter 2 as relevant to information channel credibility can be seen as elements of a context that interacts continually and dynamically with the phenomenon of interest. The power of this approach is that, depending on the focus, certain factors can be held constant and regarded as context, while in other instances they can be allowed to vary as input variables. In this way the inter-relationship between the factors themselves as well as with the phenomenon of interest can be exposed. For example, the information channel, the type of information being searched for, the origin of the information need and the various environments within which the seeking takes place could be regarded as the context or alternatively they can be controlled and their effect on pupils' trust evaluated.

From the preceding discussion, taking a user-centred approach (Courtright, 2007), the following can be seen as elements of context for a study on school pupils' perceptions of the credibility of information channels: TYPE of information sought, information CHANNEL through which it is obtained and ORIGIN of the information need. In Figure 3.7, a three-dimensional matrix is presented to reflect a context for high school pupils, which can be used to study their perceptions of information channel credibility.

To sum up, the person in context is a pupil who operates in the context of a school, which in turn is in the context of a society and country. Pupils are the **ORIGIN** of their self-generated information needs while the school generally is the origin of imposed needs. Similarly, both the school and pupil determine the **TYPE** of information needed. **CHANNELS** of information available to the pupil would be a result of what is available within the school and broader society. For the context of the information, the starting point is the need for this information.

Inherent in the need is its **TYPE** and **ORIGIN;** however, the information is acquired via information **CHANNELS**. This acquisition is on a continuum from passive to purposive, which can reflect the information channels through which the information comes – television and mass media generally on the passive acquisition side through to books and the internet on the purposive end. Bearing in mind the interactive nature of all these components of context, a three-dimensional matrix is proposed to reflect the context in which school pupils' information seeking takes place.

In order to identify the derivation of each of the *type*, *origin* and *channel* components, superscripts of ^{TOC} are inserted at the appropriate places in Figure 3.7.

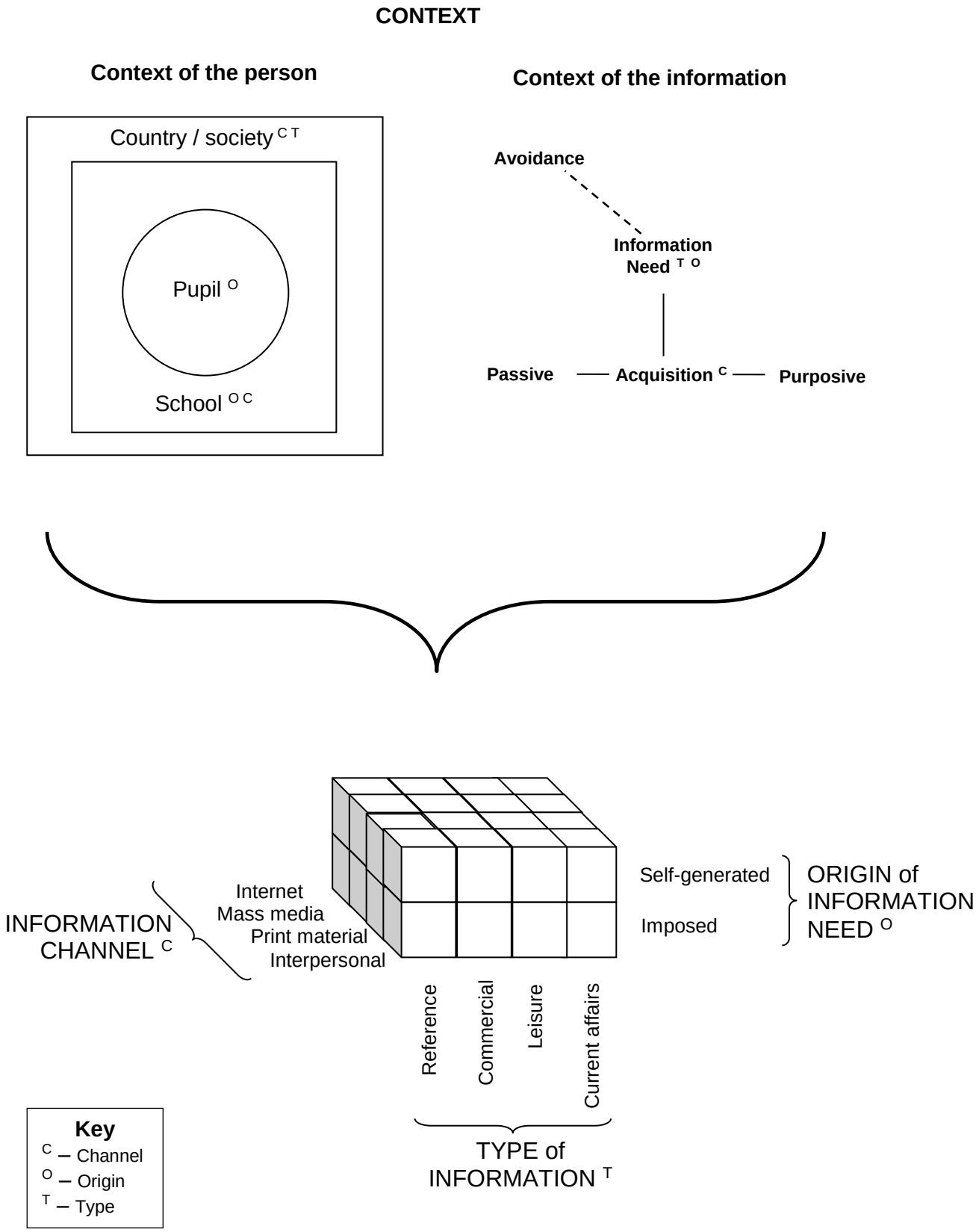


Figure 3.7 Contexts of high school information needs

Figure 3.7 shows from previous studies of context, the derivation of the three facets from which high school information contexts can be viewed, namely type of information need, information channel and origin of the information need. The value of this three-dimensional context matrix is the emphasis on the interactivity of these three facets of context. As was shown in Figure 3.7, this incorporates both the person in context and the information in context.

Table 3.1. is a brief reminder of the categories and their sub-divisions.

		Explanations and examples
Origin of information need	Self-generated	The information need comes from seekers themselves.
	Imposed	Motivation for task does not emanate from the information seeker, e.g. finding information for another person, part of requirements for a job or a task set by a teacher.
Type of information	Reference	Factual information – often associated with information found in encyclopaedias and directories as well as their on-line equivalents such as Wikipedia.
	Commercial	What one can buy, prices, good deals, product information
	Leisure	Entertainment, sport, movies, hobbies
	Current affairs	News, what is going on in the country and the world
Information channel	Internet	All information accessible to the public via the internet
	Mass media	Regular one-way dissemination of information to a broad audience. Typically covers newspapers and television.
	Print material	Includes books, magazines, pamphlets and brochures
	Interpersonal	Information obtained from another person – could be face-to-face or via phone or even person-to-person email, but would not include posting a question on yahoo.

Table 3.1 Context matrix categories and sub-categories descriptions

The components of context noted here in Figure 3.7 are inter-related and in a user-centred approach would all be regarded as having an effect on the phenomenon of interest – in this study, perceptions of information channel credibility. Using the components of the context of information needs, namely TYPE of information, information CHANNEL and ORIGIN of the information need as three axes, this conceptually illustrates 32 inter-related options, which can add insight to the effect of context on information acquisition. Specific positions in the

matrix can thus be referred to by listing the co-ordinates relative to the axes, for example, **imposed, reference, mass media** would be the context in which someone is seeking factual information from non-interactive mass media channels such as newspapers or television because they had been set a task to do.

The focus of this study in on perceptions of credibility of information. Thus the role of context here is not the object of the study but rather provides the structured framework within which credibility perceptions will occur.

One of the benefits of the simplified categorisation of context into a matrix in Figure 3.7 is that it is consistent with Courtright's (2007) observation that recent studies of context are tending towards a user-centred approach rather than a static definition of context at the beginning of a study. The matrix makes provision for 32 different combinations of the relevant factors and hence one can assess the dynamic effect of any combination; however, it is acknowledged that there are many more options, especially since each one of the components can be subdivided. The matrix in Figure 3.7 is general and covers the context of information needs and the context as a container but is not aimed at the specific characteristics of an individual.

3.4 CATEGORISATION OF EMPIRICAL STUDIES ACCORDING TO CONTEXT

Taking a user-centred approach, the components of context are dynamically inter-related and are all to an extent instrumental in affecting the phenomenon of interest. In this chapter various studies of context were integrated in the previous section to arrive at a matrix of possible contextual combinations within which information needs of high school pupils would be expected to occur. This is illustrated in Figure 3.7. Now, in order to ascertain whether the matrix in fact does adequately cover the contexts of information needs, in this section the empirical studies mentioned thus far will be categorised into the 32 context combinations defined by the context matrix.

The studies of context provided the matrix of possible context combinations, which will now be used as the framework within which to categorise the empirical studies on information behaviour previously discussed. The empirical studies are categorised according to the 32 possible combinations implied by the matrix in Figure 3.7. The component contexts for each combination are stated before briefly discussing the findings of each empirical study.

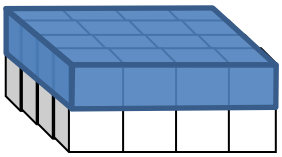
The purpose of this section is threefold

- To position the empirical information behaviour research referred to in this study in the context matrix to see if the matrix is comprehensive and covers the contexts' components and combinations as noted in literature related to a study of school pupils.
- To position previous research in the framework so that the empirical findings of this study can be methodically compared with those of past findings.
- To provide a brief categorised review of past empirical information behaviour studies so other researchers can use it as a reference. The studies selected were up to 2012.

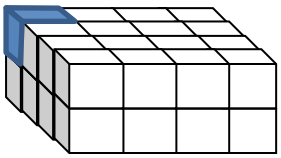
3.4.1 Context combinations

The 32 combination options in the context matrix in Figure 3.7 will now be used as a framework to categorise the empirical studies reported thus far in this work. Certain options with no entries would indicate combinations that are not typically studied information needs (e.g. imposed, commercial, printed material, which would represent a teacher asking pupils to get documentation on the price of a cell phone. While this is an everyday life information need, it appears not to be a scenario typically studied by researchers.)

3.4.1.1 Discussion of context combinations for self-generated tasks (combinations 1 – 16)



The first 16 combinations[3] of contexts involve various combinations with self-generated tasks. These involve information needs that emanate from the seekers themselves. It is not information a teacher or someone else has asked them to find out. Visually this represents the top layer of the matrix in Figure 3.7. The components of each context combination will be stated before briefly noting the relevant findings from a selection of studies.



CONTEXT COMBINATION 1: Self-generated tasks requiring **Reference** type of information found on the **Internet.**

The context combination of the following empirical studies is where

[3] The variations on this diagram will be used for the rest of this section with a shaded area to agree with the relevant combination corresponding to Figure 3.7.

participants are looking for factual information from the internet for their own purposes (i.e. self-generated).

- Rieh and Hilligoss (2008) found that health information searches for personal use by one of the participating students were subject to great scrutiny as a result of the increased risk. Similarly financial searches for personal use were subjected to greater scrutiny.

- Rieh's (2002) study had a part that was self-generated – lecturers' and doctoral students' own projects were compared to imposed tasks. Participants were more concerned about the information quality and cognitive authority of sources that pertained to their own project (i.e. self-generated) than the imposed ones covering health, commercial and leisure information. This would indicate an effect of whether a search was imposed or self-generated.

- Case *et al.* (2004) found the internet to be the channel of choice for health information among their participants of randomly selected adults. Although not explicitly stated, it is implied that the information needs were self-generated. They noted a positive correlation between the patient's existing knowledge and their choice of going to the internet.

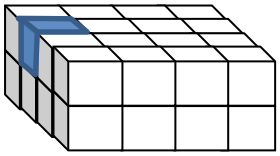
- Fogg *et al.* (2002) found among their participants of randomly selected adults using finance sites for personal purposes, people were most concerned about the professional look of the site, the motive of the site as well as the reputation of the organisation. Interestingly there was no mention of expertise – perhaps using reputation to impute expertise. On the health web sites they found more attention to the focus and usefulness of the information than for other sites.

- Lu and Yuan (2010) found that the greater the information need the less the participants (all educators) wanted non-relational sources – i.e. they wanted to talk to someone. When the information need was moderate, the participants opted for easy accessibility over information quality.

- Marton (2003) found that the women selected online regarded health information from web sites as relevant but not as reliable as other sources such as health care practitioners, books and pamphlets.

- The participants in Savolainen and Kari's (2004) study (aged 10 -70) perceived the internet to be third in value for their own personal self-development behind human sources and printed media. They saw the questionable credibility as countering the easy accessibility of the internet and as such rated it as a channel to supplement the more reliable ones.

CONTEXT COMBINATION 2: Self-generated tasks requiring **reference** type of information found in the **mass media**.



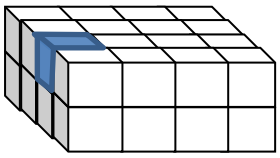
The context combination of the following empirical studies is a situation in which participants are looking for factual information from mass media such as television for their own purposes (i.e. self-generated).

- Case *et al.* (2004) found only 1% of participants (randomly selected adults) would go to the mass media for information on genetic diseases and testing.

- Flanagin and Metzger (2000) found newspapers to be perceived as the most credible source of reference information compared to radio, television, the internet and magazines. Their participants were mostly students and other adults.

- Spink and Cole (2001) found that among the household heads of low-income families in Texas, newspapers were the information source of choice on employment.

CONTEXT COMBINATION 3: Self-generated tasks requiring **reference** type of information found in **printed material.**



The context combination of these empirical studies is a situation in which participants are looking for factual information from newspapers, books, magazines and brochures for their own purposes (i.e. self-generated).

- Case *et al.* (2004) found the library to be the choice of 14% of the participants in their study (randomly selected adults) to find information on genetic diseases and testing. They noted a positive correlation between patients' existing knowledge and their choice of going to the library.

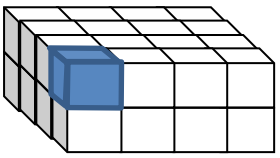
- Gross (1999) noted an increase in the prevalence of self-generated searches in the library concurrent with the introduction of access to the internet for junior school pupils. She conjectures that the internet could be freeing up time for pupils to indulge in self-generated activities in the library.

- Lu and Yuan (2010) found that the greater the information need, the less the participants (educators) wanted non-relational sources – i.e. they wanted to talk to someone.

- Marton (2003) found that health information from books and pamphlets or fact sheets was perceived as both relevant and reliable by adult women.

- The participants in Savolainen and Kari's (2004) study (aged 10-70) perceived printed media to be second in value for their own personal self-development, behind human sources.

CONTEXT COMBINATION 4: Self-generated tasks requiring **reference** type of information found from **interpersonal** sources.



The context combination of the following empirical studies is a situation in which participants are looking for factual information from other people for their own purposes (i.e. self-generated).

- In Case *et al.*'s (2004) study 18% of participants (adults) chose a doctor as their source of information on genetics, disease and testing.

- Lu and Yuan (2010) found that the greater the information need, the less the participants (educators) wanted non-relational sources – i.e. they wanted to talk to someone.

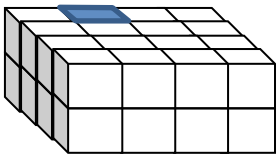
- Marton (2003) found that information from health care practitioners was perceived as both relevant and reliable by adult women.

- Meyer (2003) found that in oral cultures (obviously there was no use of textual information) use of correct entrance routes (elderly, family structure, group consensus) enhanced the credibility assessment of the information. Similarly,

presentation techniques such as metaphors, storytelling and repetition aided acceptance.

- The participants in Savolainen and Kari's (2004) study (aged 10-70) perceived human sources to be the most valuable source of information for their own personal self-development.

CONTEXT COMBINATION 5: Self-generated tasks requiring **commercial** type of information found on the **internet.**



The context combination of the following empirical studies is a situation in which participants are looking for commercial information from the internet for their own purposes (i.e. self-generated).

- Rieh and Hilligoss (2008) record a student's information search to buy a video game as a gift for a poor child. Greater attention was paid to credibility because it was for someone else.

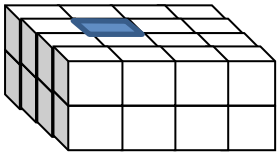
- Flanagin and Metzger (2000) found that adult and student participants in their study perceived commercial information as less credible than news, reference or leisure information on the internet, as well as newspapers and television.

- Fogg *et al.* (2002) found that the participants in their study (randomly selected adults) were generally more suspicious of commercial web sites than other sites. Their assessment of the sources' credibility depended to a large extent on the reputation of the organisation.

- Rieh (2002) found that the participants (lecturers and doctoral students) had very little concern for the information quality and cognitive authority of sources that pertained to research for purchasing a computer.

- Shen, Chiou and Kuo (2011) found that the seller's reputation, product quality and the web site argument presentation all contributed to the perceptions of a good buy on the eBay online auction site.

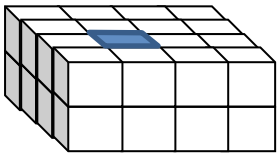
CONTEXT COMBINATION 6: Self-generated tasks requiring **commercial** type of information found in the **mass media.**



The context combination of the following empirical study is a situation in which participants are looking for commercial information from mass media such as television for their own purposes (i.e. self-generated).

- Flanagin and Metzger (2000) found newspapers to be perceived as the most credible channel of commercial information compared to radio, television, the internet and magazines. They also found commercial information to be perceived as less credible than news, reference or leisure information in newspapers, television and the internet by the adult and student participants in their study.

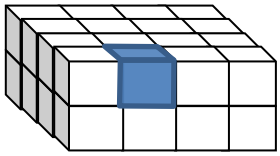
CONTEXT COMBINATION 7: Self-generated tasks requiring **commercial** type of information found in **printed material.**



The context combination of the following empirical studies is a situation in which participants are looking for commercial information from newspapers, books, magazines and brochures for their own purposes (i.e. self-generated).

None of the selected empirical studies covers this context combination.

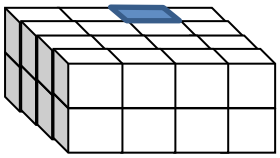
CONTEXT COMBINATION 8: Self-generated tasks requiring **commercial** type of information found from **interpersonal** sources.



The context combination of the following empirical studies is a situation in which participants are looking for commercial information from other people for their own purposes (i.e. self-generated).

- Rieh and Hilligoss (2008) found students using a relative with experience in eBay trading as the first reference before going onto the internet. Another looking for nutritional supplements started with a sales person at a fair but was not convinced of the person's credibility, next chatted to his coach, then researched it on the internet before going to a local store and chatting to a weightlifter.

CONTEXT COMBINATION 9: Self-generated tasks requiring **leisure** type of information found on the **internet.**



The context combination of the following empirical studies is a situation in which participants are looking for leisure information from the internet for their own purposes (i.e. self-generated).

- In Rieh and Hilligoss' (2008) study a student participant needing very general leisure information chose Google as the starting point.

- Fogg *et al.* (2002) found that participants (randomly selected adults) were much less concerned about the credibility of entertainment sites than in any other context. What did influence perceptions negatively were systemic problems with sites failing to load.

- Fogg *et al.* (2002) found factors used to assess sport web site credibility were not focused on the information but rather on the peripheral issues. The attention was on the focus of the content and the presence of advertisements was experienced as negative. Similarly for travel sites, little attention was paid to information accuracy or bias, but substantial emphasis was placed on customer service offered as an indicator of credibility.

- Rieh (2002) found that the participants (lecturers and doctoral students) had very little concern for the information quality and cognitive authority of sources that pertained to research for travel information.

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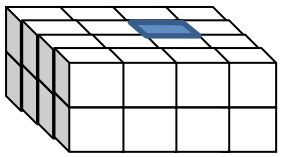
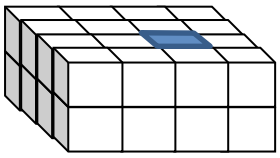
CONTEXT COMBINATION 10: Self-generated tasks requiring **leisure** type of information found in the **mass media.**



The context combination of the following empirical study is a situation in which participants are looking for leisure information from mass media such as television for their own purposes (i.e. self-generated).

- Flanagin and Metzger (2000) found newspapers to be perceived as the most credible channel of entertainment information compared to radio, television, the internet and magazines by the adult and student participants in their study.

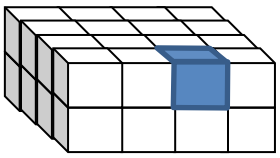
CONTEXT COMBINATION 11: Self-generated tasks requiring **leisure** type of information found in **printed material.**



The context combination of empirical studies with this combination is a situation in which participants are looking for leisure information from newspapers, books, magazines and brochures for their own purposes (i.e. self-generated).

None of the selected empirical studies covers this context combination. There are, however, many books, magazines and brochures on travel, hobbies, sport star's biographies etc., so this is a context combination with potential for study.

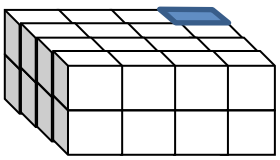
CONTEXT COMBINATION 12: Self-generated tasks requiring **leisure** type of information found from **interpersonal** sources.



The context combination of the following empirical study is a situation in which participants are looking for leisure information from other people for their own purposes (i.e. self-generated).

- Rieh and Hilligoss (2008) found one of the participants in their study (student) with an injured ankle was given incorrect advice by a teacher, but on verifying the information with a medical expert, got the correct information.

CONTEXT COMBINATION 13: Self-generated tasks requiring **current affairs** type of information found on the **internet.**



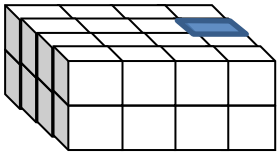
The context combination of the following empirical studies is a situation in which participants are looking for information on current affairs from the internet for their own purposes (i.e. self-generated).

- One of the participants in Rieh and Hilligoss' (2008) study (a student) unquestioningly believed her friends' opinion about a political group. On verifying the information later, she was confused by contradictory web sites. Eventually she went to a rally to see for herself. Another participant assesses the information credibility of a story on whether it is reported on television, in newspapers or on the internet. This concerns simply whether an incident occurred rather than the quality of the information.

- Fogg *et al*. (2002) found factors used by randomly selected adult participants in their study to assess news web site credibility were significantly different from those used for other sites. Emphasis was placed on the information itself – focus, accuracy and bias.

- The journalists in Cassidy's (2007) study regarded news on the internet to be only moderately credible.

CONTEXT COMBINATION 14: Self-generated tasks requiring **current affairs** type of information found in the **mass media.**



The context combination of the following empirical studies is a situation in which participants are looking for information on current affairs from mass media such as television for their own purposes (i.e. self-generated).

- One of the participants in Rieh and Hilligoss' (2008) study (a student) assesses the information credibility of a story on whether it is reported on television, in newspapers or on the internet. This concerns simply whether an incident occurred, rather than the quality of the information.

- Flanagin and Metzger (2000) found that the adult and student participants in their study perceived newspapers as the most credible channel of news compared to radio, television, the internet and magazines.

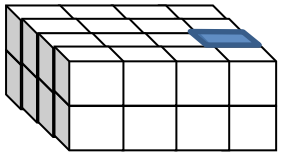
- Flanagan and Gallay (2008) found a decrease in trust of the media by high school pupils from the beginning to the end of a semester course on social studies.

- Gunter (1992) found that the greatest contributing factor to people's perceptions of television and newspapers' credibility was how involved the person was in the subject. The finding was that this was an inverse relationship – the more involvement, the greater the scepticism. The participants in his study were randomly selected adults.

- Spink and Cole (2001) found that among low-income communities, their perceptions of news tended to be centred on real life activities rather than world events. Thus

their ranking of valuable sources of information was family, school, television and then newspapers.

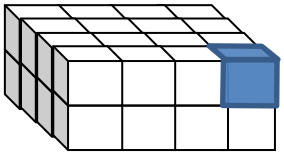
CONTEXT COMBINATION 15: Self-generated tasks requiring **current affairs** type of information found in **print material.**



The context combination of empirical studies in this combination is a situation in which participants are looking for information on current affairs from newspapers, books, magazines and brochures for their own purposes (i.e. self-generated).

None of the selected empirical studies covers this context combination. It could be because books tend to have a lag time in publication so the information might not be as current as a newspaper might be, but for background knowledge on current affairs this appears to be a neglected context combination.

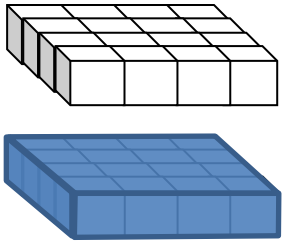
CONTEXT COMBINATION 16: Self-generated tasks requiring c**urrent affairs** type of information found from **interpersonal** sources.



The context combination of the following empirical studies is a situation in which participants are looking for information on current affairs from other people for their own purposes (i.e. self-generated).

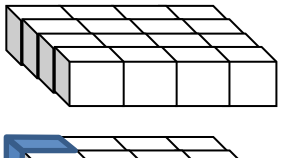
- One of the participants in Rieh and Hilligoss' (2008) study (a student) unquestioningly believed her friend's opinion about a political group. On verifying the information later she was confused by contradictory web sites. Eventually she went to a rally to see for herself.

- Spink and Cole (2001) found that among low-income communities, their perceptions of news tended to be centred on real life activities rather than world events. Thus their ranking of valuable sources of information was family, school, television and then newspapers.

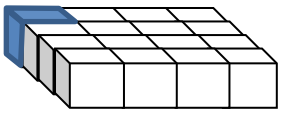


3.4.1.2 Discussion of context combinations for imposed tasks (combinations 17 – 32)

The next 16 context combinations are of imposed tasks. For school pupils these would typically be information needs for tasks set by the teacher. Visually in the diagram of the context matrix these are represented on the bottom layer of the matrix. For illustrative purposes the top layer has been lifted to show the bottom layer more clearly.



CONTEXT COMBINATION 17: Imposed tasks requiring **reference** type of information found on the **internet.**



The context combination of the following empirical studies is a situation in which participants are predominantly pupils or students who are finding facts from the internet. The tasks are not their own choice but have been chosen by someone else.

- The participants in Bates *et al.*'s (2006) study (adults selected from the public) were given identical information purported to be either from highly credible sources or simply of unknown origin. The finding was that the credibility of the source was irrelevant to participants' assessment of the credibility of the information.

- Madden, Ford and Miller (2007) found that pupils (aged 11-16) perceived the internet to be a very useful source of information, which the authors attributed to the amount of money spent by the UK government on internet connectivity. They were, however, surprised in the follow-up study to see how relatively little the internet was in fact used. English, Science, History and Mathematics were found to be the subjects in which there was the greatest use of computers for homework.

- One of Rieh and Hilligoss' (2008) participants (undergraduate students) needing general background information chose an online encyclopaedia (Wikipedia) as the starting point. Another demonstrated the principle of satisficing when searching for information. This participant used the quick, easy option of Wikipedia rather than an authoritative database because Wikipedia was good enough for his needs. The participants were fully aware of the difference between scholarly peer-reviewed articles (Google Scholar) and those of a general nature.

- The participants in Agosto's (2002:338) study (female pupils from grade 9 and 10) based their assessments of information quality on peripheral clues such as the quantity of information and design features.

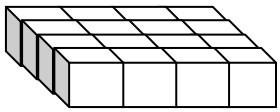
- The participants in Metzger, Flanagin and Zwarun's (2003) study (students and other adults) did not perceive the internet to be as credible as newspapers, television and magazines.

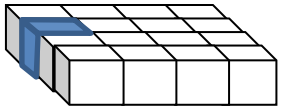
- Rieh (2002) found that participants (lecturers and doctoral students) were more concerned about the information quality and cognitive authority of sources that pertained to their own project than when researching health, commercial and leisure information. This would indicate an effect of whether a search was imposed or self-generated. They did have concern for the cognitive authority of health information sources.

- The pupils in Walraven, Brand-Gruwel and Boshuizen's (2009) study (grade 9) very seldom evaluated the credibility of information but they did occasionally evaluate the title and summary when deciding whether to pursue a source.

This context combination appears to be the most prolific in terms of targets for empirical researchers. This combination would be positioned in Johnson's (2009) grid on the purposive side, as participants are looking for information, but researchers have not recorded whether participants actually want to find the information or to avoid it. The tasks are imposed and while this could affect the motivation of the participants, this has not been acknowledged by the researchers and this gap in the literature needs to be addressed.

CONTEXT COMBINATION 18: Imposed tasks requiring **reference** type of information found in the **mass media.**





The context combination of the following empirical studies is the use of mass media such as television by someone who is tasked to find information. Mass media have been noted as being a non-relational source of information and hence more suitable for haphazardly (yet importantly) accumulating information over time. Hence a reason for the low representation of research in this context combination

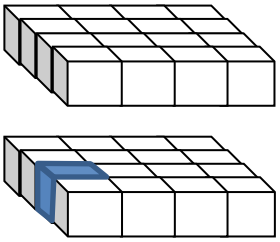
would be an indication of low compatibility of a non-relation source with purposive information seeking.

- Madden, Ford and Miller (2007) found very little use of mass media in completion of homework tasks among pupils aged 11-16.

- Participants in Metzger, Flanagin and Zwarun's (2003) study (students and other adults) did not perceive the internet to be as credible as television.

- This context combination appears to be under-researched relative to its potential as an information source. This will be addressed in the empirical design of this study.

CONTEXT COMBINATION 19: Imposed tasks requiring **reference** type information found in **print material.**



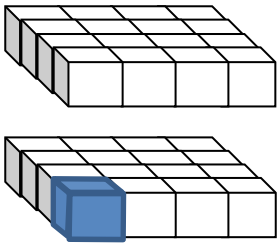
This context combination covers empirical research where the participants were carrying out an information task set by someone else and used newspapers, books, magazines and brochures as their source. The information required was of the reference type.

- Madden, Ford and Miller (2007) found moderate use of books in completion of homework tasks among pupils aged 11-16. Interestingly use of a library was very low.

- Students in Rieh and Hilligoss' (2008) study ascribed credibility to textbooks on the basis of the teacher's endorsement. Similarly, criticism of a book by a teacher resulted in a perception of lack of credibility by the student. Another student used two books from a bookstore to cross-reference a History assignment.

The relative scarcity of entries in this context combination will be a reflection of the trend towards research of the internet in more modern research. Older research has greater representation of the use of books.

CONTEXT COMBINATION 20: Imposed tasks requiring **reference** type information found from **interpersonal** sources.



The context combination of the following empirical studies represents participants, acting on instructions of someone else, using a person while looking for factual information.

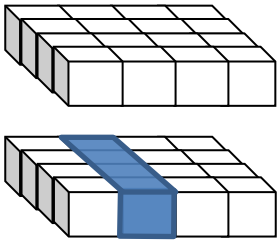
- Madden, Ford and Miller (2007) differentiate interpersonal information sources into friends, relatives and teachers. They found pupils (aged 11-16) to perceive these to be very useful sources of information and this correlated with observations they made later in the year. In virtually every subject the pupils' first choice of information source was a person. The authors did, however, note that reliance on interpersonal sources diminished with age.

- Rieh and Hilligoss (2008) note how students' perception of a professor's credibility is bounded – accepted within the bounds of his own area of expertise. A student had the motivation to undertake a series of searches to verify a rumour about academic commitments – friends, peers, web site, faculty administration office and eventually email to get credible information.

- Bruce *et al.* (2003) studied the collaborative information retrieval behaviour of two teams of design engineers. The predominant method used to obtain information was from other people – either inside the team or outside.

- Levin, Whitener and Cross (2006) found that initially in brand-new relationships trust was based on similar demographics; intermediate length relationships were based on trustworthy behaviour, while long relationships were based on a shared perspective. Participants were adult employees in an organisation.

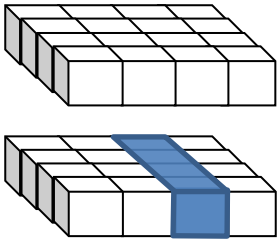
CONTEXT COMBINATION 21-24: Imposed tasks requiring **commercial** type of information found from the **internet, mass media, print material** and **interpersonal consultation.**



None of the selected empirical studies covers these context combinations, although this combination is well represented in research under self-generated combinations. Participants in Flanagin and Metzger's (2000) study found

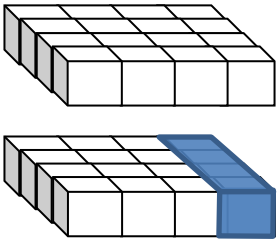
newspapers to be perceived as the most credible source of commercial information, which would indicate that this is a neglected combination with potential for exploration. This is a factor to be considered when looking at school-based interventions to align pupils' perceptions with those of the adult world for which they are being prepared.

CONTEXT COMBINATION 25-28: Imposed tasks requiring **leisure** type of information from the **internet, mass media, print material** and **interpersonal consultation.**



None of the selected empirical studies covers these context combinations, although in the self-generated equivalent combinations this is an area in which numerous studies have been published (Fogg *et al.*, 2002; Flanagin & Metzger, 2000; Rieh, 2002; Rieh & Hilligoss, 2008). School-based interventions can potentially use this lack of attention to prepare pupils for the real world.

CONTEXT COMBINATION 29-32: Imposed tasks requiring **current affairs** type of information from the **internet, mass media, print material** and **interpersonal consultation.**



None of the selected empirical studies covers these context combinations, while in the self-generated equivalent combinations this is an area in which numerous studies have been published (Cassidy, 2007; Fogg *et al*., 2002; Flanagan & Gallay, 2008; Flanagin & Metzger, 2000; Gunter, 1992; Rieh & Hilligoss, 2008; Spink & Cole, 2001). School-based interventions can potentially use this lack of attention to prepare pupils for the real world.

3.4.2 Observations on contexts covered in the reported studies and implications for this study

At the time of identifying these studies, various context combinations, as interpreted for the purposes of this study, were not covered in reports on empirical studies. These gaps in research coverage might point to contexts that are not part of typical information activity or might not be convenient to study. The benefit of fitting studies into a framework is that it allows one to identify gaps and question the reason they are there.

One of the glaring gaps is in the area of imposed tasks. Typically imposed tasks are school projects and the categorisation indicates that there appears to be greater focus on reference

type information and fewer incentives for pupils to find commercial, leisure or current affairs information. This is confirmed by a literature search early in 2016. By the nature of some types of information needs they are perhaps less suited to an information channel that typically has a lag time on publication.

A perspective on context that is perhaps on a different level to what was covered thus far is the context of the actual questioning in the empirical studies. Mass media appear to be under-represented in the empirical results as an information channel. Case *et al.* (2004) mention that mass media are seen as an important information channel to disseminate health information. Howard (2011) finds that reading for pleasure is an important source of everyday life information for teenagers. Savolainen (2008) finds print media, the internet and radio/television to be valued orienting sources of information. Similarly, Flanagin and Metzger (2000) find that newspapers are regarded as the most credible of the mass media, including the internet. A possible reason for under-representation of mass media in empirical data could be attributed to the way survey questions are asked. If asked where one would find information on a particular topic, the answer might be different than when asking where one's current knowledge on that topic has come from. This effect will be discussed further in Section 4.4.4.6 and covered in the survey questionnaire.

3.4.3 Impact of context observed from information-intensive professions

For certain professions, such as journalism, law and medical science, there is of necessity strong emphasis on the ethical and effective use of information; especially on issues of the credibility and trust of that information (Castillo, Mendoza & Poblete, 2013; Eysenbach *et al.,* 2000; Leckie, Pettigrew & Sylvain, 1996). For the purposes of this study, they will be used as examples of information-intensive professions and their assessment of credibility might shed light on benchmarks for which education should aim. Information-intensive professions are not the focus of this study, hence they are covered briefly. The purpose is to acknowledge the adult world of work for which the pupils are being prepared.

- Journalists subscribe to a code of ethics emphasising truthfulness, accuracy, objectivity, impartiality, fairness, minimising harm and public accountability (Laitila,1995).
- The law fraternity has codes, from the country's constitution down to codes governing the admissibility of evidence. There is emphasis on the internal and external consistency of evidence.

- For medical science most countries have the equivalent of the Health Professions Council of South Africa, which is the custodian of standards (Marsh, 1994).

The practices of information-intensive professions add value to this study of information credibility because of the premium placed on information credibility by these professions. An overview of what can be learned is:

- Potential conflict of interest
- The value of information from a source with self-regulation
- The importance of educating the public to recognise information credibility criteria
- The importance of internal as well as external consistency of information.

3.5 CONCLUSION

This chapter began by looking at the concept of context as it relates to information behaviour. The context of the person on the one hand and the context of the information on the other were combined to give a matrix of possible context combinations within which to consider perceptions of information channel credibility applied to school pupils. Adopting a user-centred approach, these factors can all be regarded as dynamic components of the context, which can be held constant or allowed to vary in order to observe their effect on the phenomenon of interest (the perceptions of information channel credibility).

It was also found that aspects of context relating to the person-in-context, specifically relating to passively obtained background knowledge, might be under-represented in a typical survey. This would need to be addressed by building provisions into the empirical methodology to record specifics about the individual's source of background knowledge.

Then all the contexts of the selected empirical information behaviour research covered in this study were categorised into one of the 32 possible context combination locations. (Selected studies covered the period up to 2012). From this categorisation it was evident that some contexts were more popular with researchers than others (many school and student studies as well as concentration on the internet). Some contexts appear to be less suitable for school application and hence are not covered (no imposed tasks in the leisure, current affairs and commercial contexts). Some contexts appear to be taken more seriously by participants than others (self-generated tasks compared to imposed tasks). Some contexts, on the other hand, present an inappropriate combination (seeking commercial, leisure and current affairs information from books would be inappropriate).

The chapter then ended by looking briefly at the context of various professions whose work revolved around information and its credibility. Methods employed in these professions could possibly be instructive in teaching good practice to the next generation of adults while still at school. A matter of importance is that there is a broad range of attitudes to information credibility among the professional information workers, with some information being accepted "as is" while other information is held up to the most stringent scrutiny. In applying findings from this study to the school environment, care should be taken to include educating pupils to differentiate differing contexts.

While the context in which information behaviour occurs does not directly address the research questions posed in Chapter 1, the importance of considering context is very clear.

CHAPTER 4

METHODOLOGY

4.1 INTRODUCTION

The purpose of this study was to explore high school pupils' perceptions of information channel credibility to inform school-based interventions with the aim of improving the information behaviour of future adults. In this chapter previous research on trust, credibility and risk are synthesised into a trust model specifically allowing for information channel credibility. This model, together with the context matrix developed in Chapter 3, is used as a basis for the empirical part of this study.

The choice of the research methodology and methods is based on a tabulated review of reported studies to determine the most appropriate means of collecting empirical data from a population of high school pupils regarding their perceptions of information channel credibility, as well as textbooks on research methods. The chapter sets out the research design consisting of the research approach, research method, methods of data collection, the methods of sampling, considering reliability and validity and gathering data while complying with ethical practices.

4.2 EXTENSION OF TRUST MODEL TO AN INFORMATION CHANNEL CREDIBILITY MODEL

The benefit of using a model as a basis for empirical research is that it provides a theoretical framework against which results can be compared and hypotheses confirmed or rejected (Bitso & Fourie, 2012; Cohen, Manion & Morrison, 2000). Before discussing the methodology and research design of the empirical study the application of the model is explained.

From the literature covered so far in this study it is evident that much research has been conducted on issues concerning credibility and information behaviour. However, more studies on the impact of perceptions of information channel credibility in school contexts are required. The models discussed so far (in Section 2.2) have focused on specific aspects such as trust (Agudo, Fernández-Gago & Lopez, 2009; Catellier & Yang, 2012; Hagar, 2010;

Huang, 2015; Levin, Whitener & Cross, 2006; Marsh & Dibben, 2003; Mayer, Davis & Schoorman, 1995), credibility (Biddix, Chung & Park, 2011; Carpenter *et al.*, 2011; Castillo, Mendoza & Poblete, 2013; Flanagin & Metzger, 2011; Fogg *et al.*, 2002; Francke & Sundin, 2012), information behaviour (Bowler, 2010a; Johnson, 2009; Gasser *et al.*, 2012; Thornley *et al.*, 2015; Wilson, 1999) and internet-based decision making (Agosto, 2002; Subramaniam *et al.*, 2015).

In chapter two a model based on a synthesis of various studies on trust, credibility and risk was developed with the intention of specifically applying it to trust (including credibility) of information in information seeking. It is based on the argument that trusting behaviour is displayed when the trustor uses information from the trustee. A generalised trust model discussed in Chapter 2 (Figure 2.9) is repeated in Figure 4.1 and will be extended to accommodate perceptions of information channel credibility in information seeking.

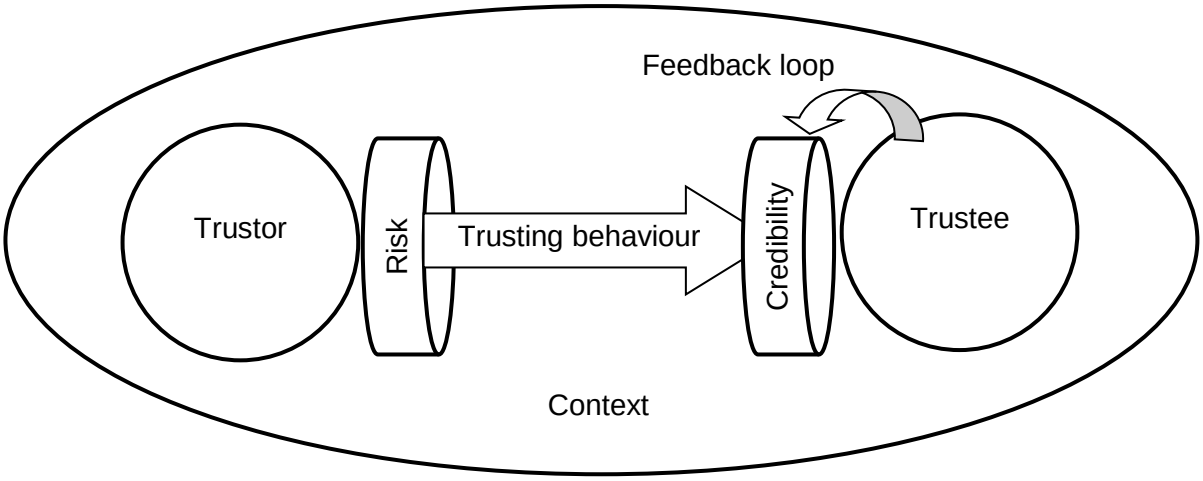


Figure 4.1 Trust model proposed in Chapter 2 (Figure 2.9) for application to information seeking

The trustor is the information seeker and the trustee is the source of information. The risk lies in possibly acting on information that is not in fact as credible as it is perceived to be. Perception of the credibility of information is among others influenced by experience (Gray *et al*., 2005; Pérez *et al*., 2014; Kostoulas *et al*., 2008; Levin, Whitener & Cross, 2006; Rowley & Johnson, 2013) and/or the recommendation of a third party (Abdul-Rahman & Hailes, 1997; Lim & Steffel, 2015; Marsh, 1994; Ramchurn *et al.*, 2004). In Figure 4.1 this is represented by a feedback loop between the trustee and the perceptions of information channel credibility. Trusting behaviour takes place when the trustor uses information from the trustee. In order to apply the trust model in Figure 4.1 in this study, each of the

components will be explained in a little more detail, based on insights gained in previous chapters.

Context: It was noted in Chapter 3 that in a user-centred approach one needs to acknowledge the context of a person (e.g. a school) as well as the context of the information (Courtright, 2007). Based on studies by Wilson (1981, 1997), Dervin (1997) and Johnson (2009) and some others, as discussed in Section 3.2.8, it was also found that context could be represented as a three-dimensional matrix with the axes as the information channel available/offered (print material, mass media, the internet, people), origin of the search (imposed or self-generated) and information type (reference, commercial, leisure, current affairs). For the purpose of this study the macro-context will be high schools in South Africa as a developing country and more specifically at a micro-context level where the pupils face scenarios of information seeking needs (corresponding to the origin of the information need, the types of information required and the information channels available to them).

Trustor: In Figure 4.1, the trustor is the information seeker. According to Marsh and Dibben (2003) a person's inherent personality trait with respect to trust is described as dispositional trust. Lucassen and Schraagen (2012) describe it as a general propensity to trust. For the purpose of this study, the trustors will be high school pupils and their dispositional trust will be measured. When pupils' credibility perception is measured for a given scenario or information channel it is that component's credibility that is being evaluated. However, when all scenarios and channels are aggregated, this is a measure of the pupils' dispositional trust. In order to understand the characteristics of information seekers one needs to record their demographic information, their background knowledge and experience.

Trustee: In Figure 4.1, the trustee would be the source of information (i.e. the source that needs to be trusted). The term "information channel" (Case, 2012) will be used in order to differentiate the medium through which the information is accessed rather than the source, which would be the person who originally supplied the information. For the purpose of the questionnaire the term "source" will be used to avoid confusing pupils with unfamiliar technical terminology. Flanagin and Metzger (2000) studied perceptions of mass media, namely newspapers, magazines, radio, television and the internet. For the purpose of this study it is necessary to include books (Case *et al.*, 2004; Gross, 1999; Lim & Steffel, 2015; Marton, 2003) and personal contacts as well (Bruce *et al*., 2003; Case *et al.*, 2004; Gross & Latham, 2009; Levin, Whitener & Cross, 2006; Madden, Ford & Miller, 2007; Marton, 2003; Meyer, 2003; Notley, *et al*., 2012) to allow for a representative range of information channels that apply to the context of school pupils. Another distinction applicable to information

channels is to differentiate between relational and non-relational channels (Lu & Yuan, 2010). Relational channels refer to where the information seeker can interact with the source in person – a specific question can be posed and an answer supplied. Non-relational channels, on the other hand, are channels of information where the answer needs to be found by the seeker. Savolainen (1995) categorises information channels as passive (e.g. television) as opposed to information channels that require active enquiry (e.g. looking up on the internet). Madden, Ford and Miller (2007) found a negative correlation between pupils' age and relational information channels, i.e. the older the pupils get the more they move from relational to non-relational information channels, which is perhaps due to increasing complexity of tasks with age. However, Bruce *et al.* (2003), studying two groups of engineers, actually found they favoured relational information channels so this apparent anomaly requires more attention.

Trusting behaviour: For trusting behaviour to occur, trust has to supersede a co-operation threshold (Marsh, 1994; Mayer, Davis & Schoorman, 1995). In the case of information channels the trusting behaviour is measureable and observable – does the information seeker use the channel? The justification for this study not focusing on trusting behaviour is discussed in Section 4.4.4.4.

Risk: Risk is a fundamental component of the trust relationship (Mayer, Davis & Schoorman, 1995). The trustor (i.e. the information seeker) must evaluate the risk associated with using incorrect information from the trustee (i.e. the information channel). Hovick, Kahlor and Liang (2014a) found risk perception to be a strong predictor of response in terms of information seeking.

Credibility: As explained in Section 2.4 the term credibility is generally used to cover both the trustworthiness of information as well as the perceptions of its trustworthiness (Flanagin & Metzger, 2000; Hilligoss & Rieh, 2007). Credibility of information covers believability, accuracy, trustworthiness, bias and completeness (Flanagin & Metzger, 2000; Lim & Simon, 2011). Thus in order to measure credibility, one would have to take the actual piece of information and assess each of the listed criteria (presumably using a subject expert). The research covered in the literature analysis in this study does not appear to assess information credibility explicitly. The focus is closer to what is interpreted as perception in this study. The Mayer, Davis and Schoorman (1995) model distinguishes ability, benevolence and integrity. Levin, Whitener and Cross (2006) emphasise the common purpose felt by the trustor with the trustee. Marsh and Dibben (2003), in considering learned and situational trust, note the role of past experience and context. Flanagin and Metzger

(2008), Johnson and Case (2012) and Savolainen (2011) include source, message and medium. These are aptly captured in Wathen and Burkell's (2002) source characteristics (the perception of the credibility of the originator of the information – in this study source is replaced by channel), message characteristics (the perception of the credibility of the actual content) and receiver characteristics (characteristics of the information seeker, such as background knowledge, experience, disposition towards trust etc.).

The above discussion on perceptions of information credibility also applies to perceptions of information channel credibility. This study is mostly concerned with information channels.

Feedback loop: In studies on trust there are numerous instances of a feedback loop being used to inform the trustor better in future decisions. Spink (2000) emphasises the importance of the feedback loop in information behaviour. Personal experience in the form of the length of the relationship is an example of the feedback loop (Levin, Whitener & Cross, 2006). A common application is in the field of e-commerce where decisions as to whether one can trust the stranger with whom one is trading is based on a feedback system (Abdul-Rahman & Hailes, 1997; Pérez *et al.,* 2014; Marsh, 1994; Ramchurn *et al.*, 2004).

How each of these components will feature in this study is discussed in section 4.4.4.

The trust model (Figure 4.1) can thus be adapted to explain information channel credibility and this is illustrated in Figure 4.2.

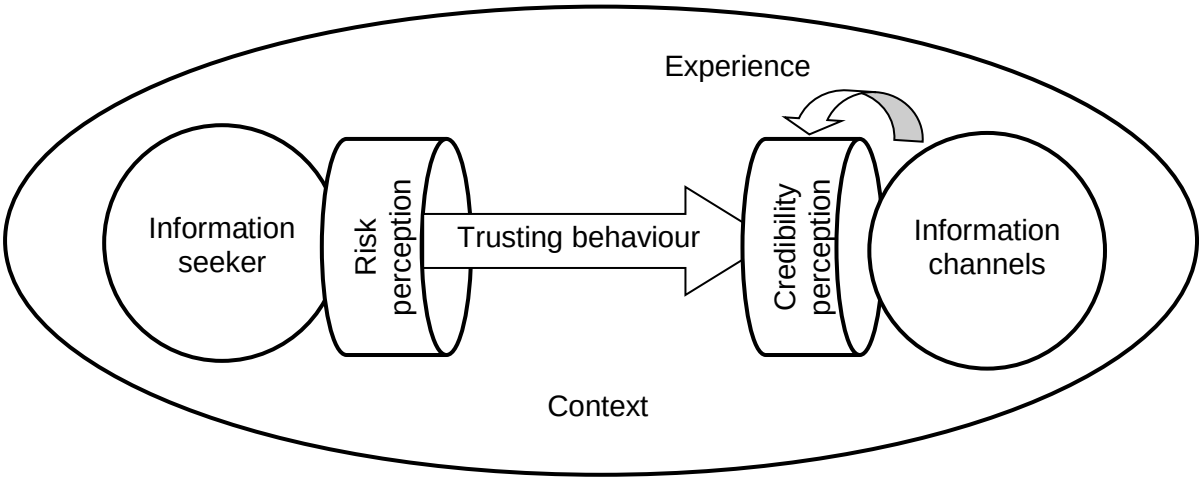


Figure 4.2 Summarised information channel credibility model

The essence of the preceding discussion is reflected in a more comprehensive information channel credibility model in Figure 4.3. The model in Figure 4.3 guided the empirical part of this study; it addressed the context, the information seeker, risk, trusting behaviour, perceived credibility of information channels, the actual credibility of information, information channels and the feedback loop. The detail in Figure 4.3 is derived from discussions in Chapters 2 and 3. Not all the detail in the figure is applied to the empirical study and data collection, but is included here for completeness. The actual credibility of information will not be measured.

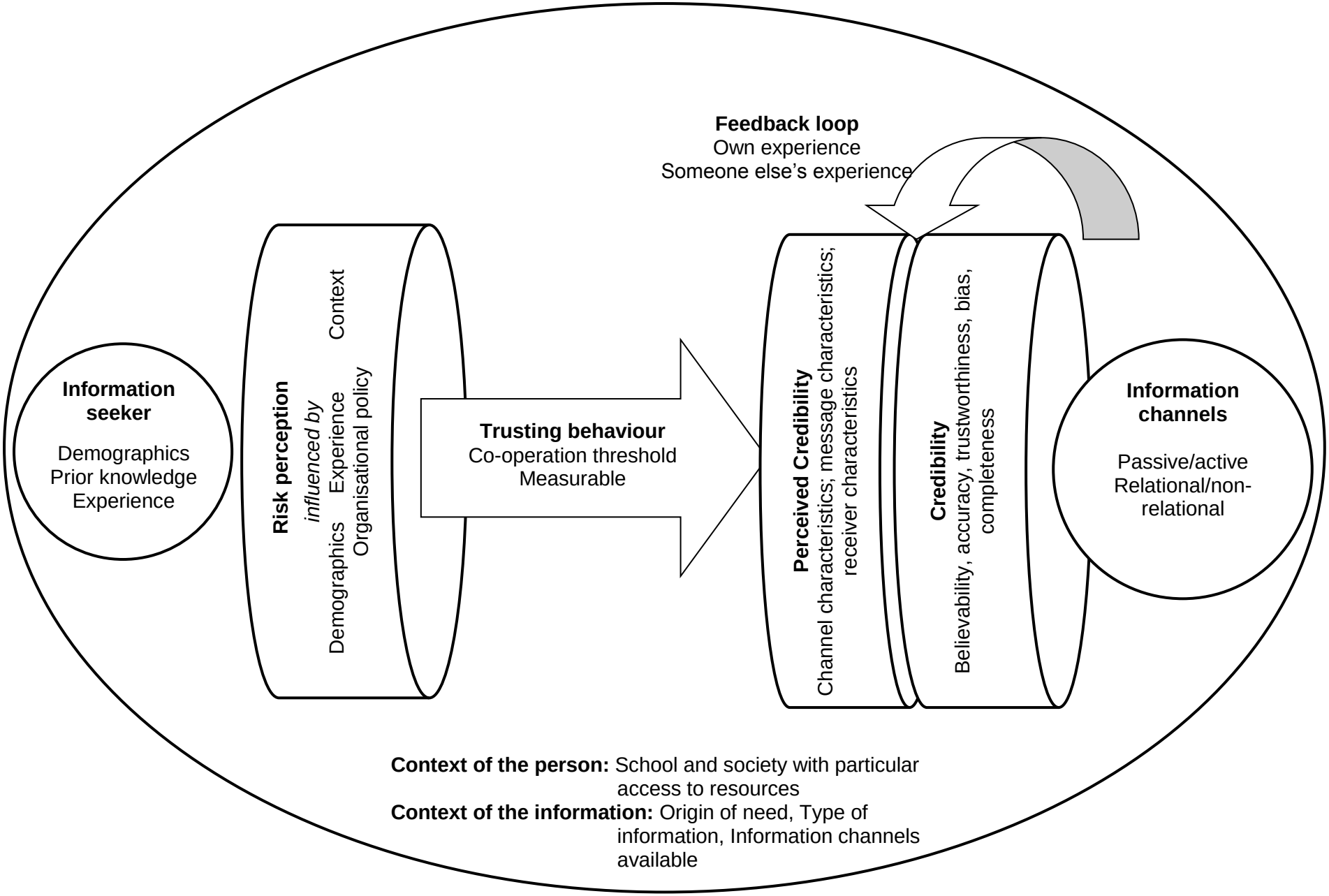


Figure 4.3 Information channel credibility model to guide empirical component

The components of Figure 4.3 were used to inform the contents of the questionnaire in Section 4.4.4. Some of the detail will feature in the recommendations for school-based interventions as well as for theory and practice, and suggestions for further research.

For the purposes of this study the research design and the choice of data collection methods, sampling, etc. were influenced by reports from similar or related studies. These are discussed in Section 4.3.

4.3 REVIEW OF RESEARCH METHODS FOR SIMILAR AND RELATED RESEARCH PROJECTS

One of the sub-questions in this study was, "How can perceptions of information channel credibility be studied?" A good starting point is to look at similar and related studies of information behaviour and how empirical studies were conducted. Table L.1 in Apendix L offers a review of studies that have been noted in earlier chapters. The focus here is on the target group, research methods and selected findings that are relevant to the planning of this study. The studies included in Table L.1 do not all specifically pertain to credibility of information. Some deal with information behaviour that serves as background for studying perceptions of credibility.

From Table L.1 it can be seen that there are many and varied ways that have been employed to study information behaviour empirically. These can also be applied to study perceptions of information channel credibility.

Some studies worked retrospectively and requested participants to look back at some information need in the past and assess how they solved it or what their resultant perceptions of the information channel were (Agosto & Hughes-Hassell, 2005 & 2006; Carpenter *et al.,* 2011; Chatman, 1996; Gray *et al.,* 2005; Gross, 1999; Gunter, 1992; Harris, Sillence & Briggs, 2011; Helligoss & Rieh, 2007; Kammerer & Gerjets, 2014; Levin, Whitener & Cross, 2006; Lu & Yuan, 2010; Marton, 2003; Savolainen, 1995; Savolainen & Kari, 2004; Shenton & Dixon, 2004; Spink & Cole, 2001; Thornley *et al.*, 2015; Whitmire, 2003). Some were based on assigning a task to participants and watching in real time how they searched for information (Agosto, 2002; Bates *et al*., 2006; Bowler, 2010b; Finley & Watmire, 2012; Flanagin & Metzger, 2011; Fogg *et al*., 2002; Kammerer & Gerjets; 2014; Madden *et al*., 2012; Petty & Cacioppo, 1986; Rieh, 2002; Shen, Chiou & Kuo, 2011; Walraven, Brand-Gruwel & Boshuizen, 2009). Others looked at the future and asked participants to predict how they would tackle a certain task or what their choice would be, given a certain information need (Case *et al*., 2004;

Cassidy, 2007; Fakhoury & Aubert, 2015; Madden, Ford & Miller, 2007; Metzger, Flanagin & Zwarun, 2003).

Studies can also be categorised according to their focus. Some got the participants to select the channel of choice for accessing the information (interpersonal, the internet, books, mass media), e.g. Agosto and Hughes-Hassell (2005). In other studies participants were required to focus on the type of information to be sought (health, news, commercial, politics, entertainment, reference, finance, travel) e.g. Fakhoury and Aubert, (2015), while others concentrated on the information seekers' characteristics such as demographics, type of occupation or even personality, e.g. Bruce *et al*. (2003).

A useful approach noted among the studies summarised in Table L.1 is the focus on the reasons identified for selecting certain information or channels: the credibility of the information (Bruce *et al*., 2003; Carpenter *et al.,* 2011; Cassidy, 2007; Duffy, Liying & Ong, 2010; Ek, Eriksson-Backa & Niemelä, 2013; Flanagan & Gallay, 2008; Flanagin & Metzger, 2000; Fogg *et al*., 2002; Gunter, 1992; Madden *et al*., 2012; Marton, 2003; Metzger, Flanagin & Zwarun, 2003; Rieh, 2002; Sundin & Francke, 2009), the ease of access (Agosto & Hughes-Hassell, 2005; Bruce *et al*., 2003; Case *et al*., 2004; Flanagin & Metzger, 2011; Shenton & Dixon, 2004) or alternatively the more pragmatic aspects of the usefulness of the information or channel in the given context (Gray *et al.,* 2005; Julien, 1999; Lu & Yuan, 2010; Lumsden *et al*., 2015; Madden, Ford & Miller, 2007; Marton, 2003; Meyer, 2003; Savolainen & Kari, 2004; Shenton & Dixon, 2004).

Another way of looking at previous studies is examining how information credibility was measured. On the one hand some studies asked participants to assess information credibility directly, measuring it by means of Likert scales or interviews (Agosto, 2002; Agosto & Hughes-Hassell, 2005; Bates *et al*., 2006; Biddix, Chung & Park, 2011; Carpenter *et al.,* 2011; Cassidy, 2007; Duffy, Liying & Ong, 2010; Flanagan & Gallay, 2008; Flanagin & Metzger, 2000; Flanagin & Metzger, 2011; Fogg *et al*., 2002; Gunter, 1992; Helligoss & Rieh, 2007; Lumsden *et al*., 2015). Another approach is to measure credibility indirectly by weighing the choices made by the participants (Biddix, Chung & Park, 2011; Bruce *et al*., 2003; Case *et al*., 2004; Dorsman, Bekkers & Edwards, 2015; Gray *et al*., 2005; Madden *et al*., 2012; Marton, 2003; Rieh, 2002; Shen, Chiou & Kuo, 2011).

A further decision to be made is whether to collect qualitative or quantitative information. In previous information behaviour studies no preference is shown either way, with some

doing qualitative surveys (Agosto, 2002; Agosto & Hughes-Hassell, 2005; Biddix, Chung & Park, 2011; Bowler, 2010c; Bruce *et al*., 2003; Chatman, 1996; Francke & Sundin, 2012; Gray *et al*., 2005; Helligoss & Rieh, 2007; Sundin & Francke, 2009) while other studies gathered quantitative information (Bates *et al*., 2006; Carpenter *et al.,* 2011; Case *et al*., 2004; Cassidy, 2007; Ek, Eriksson-Backa & Niemelä, 2013; Flanagan & Gallay, 2008; Flanagin & Metzger, 2000; Flanagin & Metzger, 2011; Fogg *et al*., 2002; Gauld & Williams, 2009; Gross, 1999; Gunter, 1992; Harris, Sillence & Briggs*,* 2011; Lumsden *et al*., 2015) and then some studies used a combination of a quantitative survey followed by qualitative interviews (Gross, 1999; Helligoss & Rieh, 2007; Rieh, 2002; Walraven, Brand-Gruwel & Boshuizen, 2009). Qualitative data is generally collected through interviews. Interviews were conducted either individually or in groups, with some being used to clarify observed information behaviour (Agosto, 2002; Bruce *et al*., 2003; Gross, 1999; Helligoss & Rieh, 2007; Rieh, 2002; Sundin & Francke, 2009; Walraven, Brand-Gruwel & Boshuizen, 2009), while others aimed to ascertain participants' motivation for action or lack of action (Agosto & Hughes-Hassell, 2005; Chatman, 1996; Francke & Sundin, 2012; Gray *et al*.*,* 2005; Savolainen,1995; Savolainen & Kari, 2004; Shenton & Dixon, 2004 Spink & Cole, 2001; Whitmire, 2003).

In the studies noted in Table L.1 there is lack of focus on the effect of risk perception and there is a scarcity of research on the effect of context on credibility perceptions. Choices for the research design of this study were influenced by the studies in Table L.1. The choices for the research design for this study are explained in the next section.

4.4 RESEARCH DESIGN

The research design directs a study. It allows for style of research, validity and reliability assessment, ethics, data collection and analysis (Cohen, Manion & Morrison, 2000). This study uses a survey, a tool used to gather information from a representative sample of people before tabulating the responses (Leedy & Ormrod, 2014; Pickard, 2013).

4.4.1 Quantitative research approach

The research design can be based on a quantitative or qualitative approach, or on a mixed methods approach. A quantitative approach is generally carried out on larger samples and focuses on numerical relationships and trends that can be inferred from the data (Cohen, Manion & Morrison, 2000). A qualitative approach, on the other hand, concentrates on the rich humanness of every case. Typically this would involve interviewing participants and coding their responses to find the reasons behind their decisions (Creswell & Clark, 2011). Mixed methods approaches attempt to draw on the

strength of both quantitative and qualitative research approaches (Creswell & Clark, 2011). This study uses a quantitative approach, covering a larger number of participants, representative of school pupils and allowing statistical analysis of factors affecting perceptions of credibility. Other information behaviour studies and specifically studies reporting on trust and credibility that used a quantitative approach include those of Bates *et al*. (2006), Carpenter *et al.* (2011), Case *et al*. (2004), Cassidy (2007), Flanagan and Gallay (2008), Flanagin and Metzger (2000), Fogg *et al*. (2002), Gauld and Williams (2009), Gross (1999), Gunter (1992) and Lumsden *et al*. (2015).

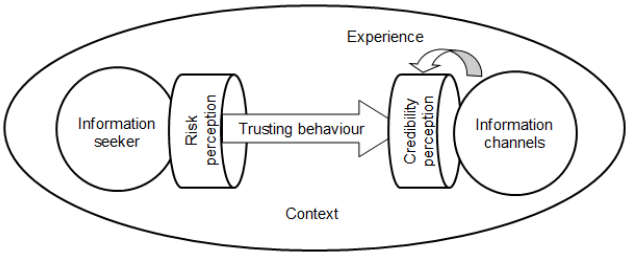
4.4.2 Means of data collection

Various means of data collection can be used, such as questionnaires, interviews, accounts, observations and tests (Cohen, Manion & Morrison, 2000). For a large-scale quantitative study a questionnaire, also used by Case *et al*. (2004), Cassidy (2007) and Fogg *et al*. (2002), seemed most appropriate. A questionnaire offers the benefit of relatively simple data collection, as well as providing structured numerical data, which is comparatively straightforward to analyse (Cohen, Manion & Morrison, 2000). Disadvantages such as the time taken to develop and pilot the questionnaire, as well as limited flexibility of response (Cohen, Manion & Morrison, 2000), are noted.

Questionnaires can be distributed in print or electronically via email or as an internet survey (Cassidy, 2007; Fogg *et al*., 2002; Levin, Whitener & Cross, 2006; Lu & Yuan, 2010; Marton, 2003).

This study used print-based questionnaires, which were handed to pupils to be completed in the presence of the survey supervisor (i.e. a teacher) and hence were collected immediately. The questionnaire is attached as Appendix A. The nature and rationale for the questions, plus links to the literature, will follow in Section 4.4.4.

4.4.3 Data to collect



Using Figure 4.3 (summarised in Figure 4.2) as a basis for data collection indicates that there is a context within which information seekers acquire information through information channels and in between there is the perception of risk and the perception of credibility. Experience with information seeking for a specific information need or type of information and the use of the information channels results in a feedback loop influencing credibility perceptions.

Demographic data on the **information seeker** – the high school pupil in this case – needed to be captured. Age, gender and grade, as well as a pupil's level of internet exposure and predominant sources of background knowledge, give a picture of the participant as trustor.

The **information channels** used in this survey (the internet, mass media, print material and interpersonal channels) were discussed in Section 3.3. For the survey the information channels specified were based on findings of studies discussed in Section 4.2, namely the internet, newspapers, television, magazines, books, brochures, friends, family, teachers and experts. It is possible to group survey responses into the four main information channel types.

The **context** in which the trustor and trustee interact needs attention. As was shown in Figure 3.7, the person in context and the context of the information are synthesised into the three dimensions of the information needs matrix, i.e. different types of information, different channels though which information can be acquired and different origins of the information. In order to cover the three dimensions fully, scenarios (referred to as vignettes by Urquhart, 2001) were set according to the categories used by Metzger, Flanagin and Zwarun (2003), i.e. reference, commercial, current affairs and leisure; as discussed in Section 4.2, these needed to be either imposed or self-generated information needs and pupils were offered the choice of information channels listed in the previous paragraph.

For this study, the scenarios of information needs were set in such a way that they covered a combination of tasks typically imposed in a school context and others that might typically be self-generated. Since strictly speaking all scenarios were presented to the pupils, they were technically all imposed tasks, thus an open-ended option was given for pupils to select an information need of their own choosing – a truly self-generated information need. For each scenario presented to the participants, they were asked to rate their **risk perceptions** of a wrong choice, choose the most credible information channel from which to find that information and then to choose from a list of possible reasons for selecting the most credible channel of information (or write their own reason). The **perceived credibility** of a particular information channel was measured by counting the number of participants who select that information channel. **Experience** was measured by recording for each scenario whether the pupil had previous experience of that particular information need.

The actual **trusting behaviour** was not measured in this study. This is a deliberate omission because of the problem of satisficing. Information seekers might accept less than optimal information and stop searching because they are satisfied that the information is good enough (Agosto, 2002). This is discussed in Section 4.4.4.4. Trusting behaviour concerns a trustor's willingness to accept risk based on the trustee's trustworthiness (Mayer, Davis & Schoorman, 1995:712). This study is on credibility perceptions and if pupils are actually asked to find the information, the results could be blurred by pupils taking the easiest route rather acting according to their true perceptions of credibility.

4.4.4 Questionnaire

Cohen, Manion and Morrison (2000) point out that a questionnaire is a widely used method of gathering survey data because it has the advantages that it can be easily administered and that it produces structured numerical data. A disadvantage is that limited flexibility of responses tends to be available to the participants. It is recommended that a questionnaire begins with non-threatening, factual questions to put the respondent at ease.

The questionnaire for this study is presented in Appendix A. It begins with demographic details of the pupils and their source of background knowledge in the areas of reference, commerce, current affairs and leisure. Then a number of scenarios are presented to the participants for which they have to record their perception of the risk involved, their preferred choice of information channel, the reason for this choice and whether they have had experience of such a need before. These are explained in more detail in the sections to follow and the full questionnaire and letter of informed consent can be found in Appendices A and C.

Figure 4.3 is used as the framework on which the questionnaire is based.

- Data on the information seeker includes demographic information, prior knowledge and previous experience. This is covered in more detail in Section 4.4.4.1 and 4.4.4.7.
- Risk perception is related to the demographics of information seekers, their past experience and the context of the information, including the organisational policy with which they have to deal. The purpose of this study was not to compare the schools and thus the organisational policy is noted for the sake of completeness

rather than because it informs the data collection structure. The way risk perception was measured is covered in Section 4.4.4.3.

- Trusting behaviour is measurable and occurs when a co-operation threshold is met. In Section 4.4.4.4 the rationale for not actually measuring trusting behaviour is discussed.
- Perceived credibility consists of channel characteristics (the perception of the credibility of the medium through which the information is accessed), message characteristics (the perception of the credibility of the actual content) and receiver characteristics (characteristics of the information seeker such as background knowledge, experience, disposition towards trust etc.). In this study perceived credibility of information channels is measured by pupils ranking their perceptions of information channel credibility. Then the effect of the other variables can be isolated.
- Credibility of the information itself is not measured in this study, in line with most other studies discussed in this work.
- Information channels were chosen based on the works of various researchers (see Section 4.2) and can be passive or active, relational or non-relational. A number of channels covering these options were offered as choices to the pupils.

- Experience was measured in a number of ways:
    - Pupils' own experience of a particular scenario was recorded.
    - Pupils' use of friends and teachers as an information channel was an example of the use of third party experience.
    - One of the possible reasons for a pupil's choice involves past experience.
    - The effect of prior knowledge was another form of experience that could be used to evaluate the effect of experience on information channel credibility.
- The context of the pupil was recorded in the form of their school and society's access to resources. The latter is only mentioned and not explored in detail within the limits of the scope of the study.
- The context of the information was covered in the questionnaire and consists of:
    - the origin of the information need
    - the type of information being looked for
    - the channels available to the pupils.

4.4.4.1 Demographic details of pupils

In the information credibility model, demographic details represent data on the information seeker. The questionnaire collected data on school grade, gender and age. This was justified by the discussion in Section 4.2. The effect of gender on perceptions of information channel credibility does not appear to have attracted the attention of researchers, but Slovic (1999) mentions its possible effect in risk analysis and risk perception. It was recorded and checked together with other variables for any influence on perceptions of information channel credibility.

Another aspect of demographic details asked of the participants was the number of hours per week that they spent on the internet. This was used as a rough measure of how immersed they were in technology. Flanagin and Metzger (2008) describe children as "digital natives" but in the context of this study, some are not yet immersed in technology and the differences between this group and digital natives is of interest to this study. Mnubi-Mchombu and Ocholla (2014), researching poor children in Namibia, found no digital usage for information seeking. Internet usage includes whatever is available on mobile technology, such as cell phones and tablets, for example the use of social media and communication programmes and thus the number of hours might initially appear high. It is a possible opportunity for another study to consider a more detailed analysis of the many subdivisions of the internet.

4.4.4.2 Scenarios

The scenarios reflect the contexts of information needs likely to be encountered by high school pupils and cover health, cell phone transactions, political information and entertainment. They are further categorised according to Flanagin and Metzger's (2000) types of information, namely reference, commercial, leisure or current affairs. In each of these contexts there is a further differentiation as to whether the information need was imposed (school assignments) or self-generated. Some of Rieh's (2002) questions "appear" to be self-generated but because they are being asked by an outsider they are technically simulated self-generated tasks rather than actually self-generated. For this survey tasks were set and worded in such a way as to resemble self-generated tasks as closely as possible. Furthermore, participants were not actually seeking the information, so all they were basing their perceptions on was a description of a self-generated information need. This is possibly an opportunity for further research to ascertain whether there is in fact a difference in perceptions between the description of a self-

generated task and an actual self-generated task. Scenario 9 in Table 4.1 was an opportunity for pupils to record a truly self-generated task.

In Table 4.1 the reason for the choice of each scenario presented in the questionnaire is discussed. The scenarios are presented according to type of information, e.g. reference, and then further split into whether the task is self-generated or imposed. Thus they are not in the actual order shown in the questionnaire (see Appendix A).

		Scenario wording and number	Reason for including it
Reference	Self-generated	5. You are worried that one of your friends might have tuberculosis (TB). You need to find out all you can about this disease. Is it catchy? What are early symptoms?	This is a very prominent disease in South Africa and would be relevant to many pupils, particularly as indicated in the question that it is affecting their own lives.
	Imposed	2. You have a school project on acquired immune deficiency syndrome (AIDS) and need to know information on the condition.	This is a very prominent disease in South Africa, but the scenario is set in such a way that the information is merely required for a school project rather than affecting the participant directly.
Commercial	Self-generated	1. You want to buy a cell phone and there are many types of phones and contracts from which to choose.	Cell phones are a significant part of high school pupils' lives. Buying the correct phone would thus be important.
	Imposed	6. As a Mathematical Literacy exercise you need to find prices on cell phone call rates to work out the best deal.	Cell phones are a significant part of high school pupils' lives, but this is only a theoretical school exercise.
Current affairs	Self-generated	3. You want to know what each of the parties in your municipal elections promise for service delivery.	Service delivery is currently a contentious issue in South Africa.
	Imposed	8. In a school project of South African history, you need information on the history of each of the political parties in your area.	Pupils are in a highly political environment but this scenario is set so that this is set as a school exercise rather than real life.
Leisure	Self-generated	7. You want to enter SA Idols (i.e. the South African talent competition) and need to know how to enter.	This is a popular television talent show in South Africa and it is reasonable to assume that young people would want to know how to enter.
	Imposed	4. You have to write a school essay on a movie and need background information.	While movies are popular among young people, this scenario is given as an imposed school exercise.
Open ended	Self-generated	9. Write down a situation you experienced in the last six months where you needed to find information.	The concern is that while a number of the scenarios are set as mirroring self-generated information needs, they are in fact still imposed by the questionnaire. This question gives an opportunity for a genuinely self-generated need.

Table 4.1 Scenarios presented in the questionnaire and reason for selection

In Figure 4.4 the scenarios used in data collection (represented by the numbers from Table 4.1) are positioned in the context matrix in order to demonstrate the coverage of various components of the context of pupils' information needs. Each scenario is positioned on the TYPE/ORIGIN plane but because each scenario involves a choice of every information channel, in fact each number represents the full row of options behind it.

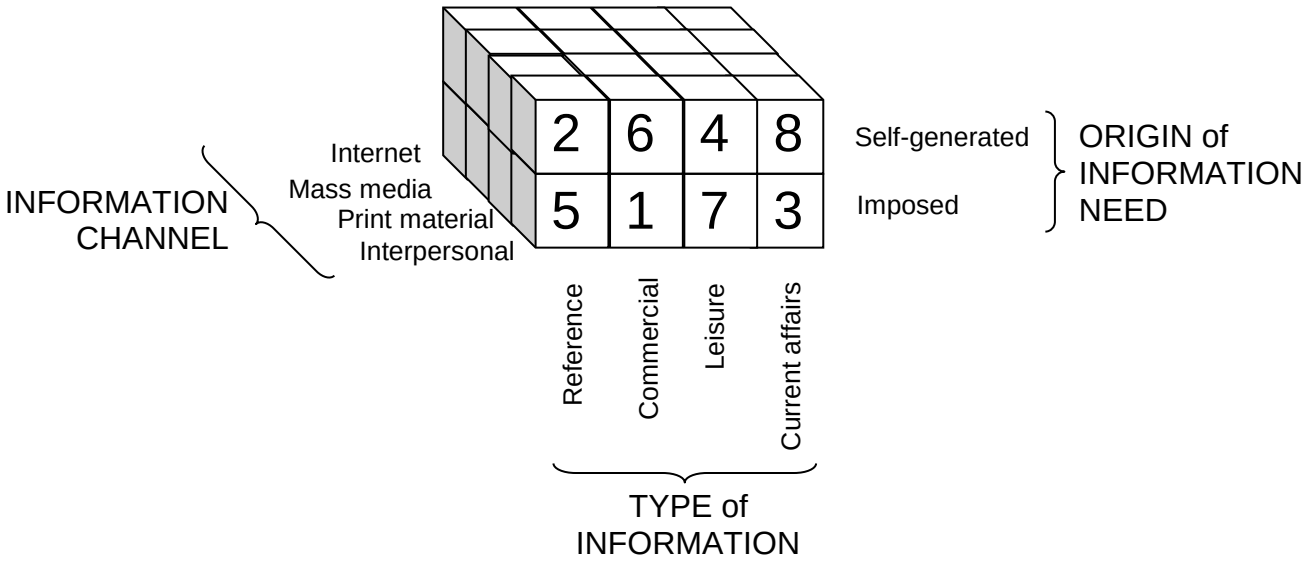


Figure 4.4 Positioning of scenarios on the information needs context matrix

4.4.4.3 Perceptions of risk

The need to assess the effect of a person's perception of risk in the scenarios in question is based on the work of Agosto (2002), Catellier and Yang (2012), Dorsman, Bekkers and Edwards (2015), Duffy, Liying & Ong (2010), Flanagin and Metzger (2000), Hovick, Kahlor and Liang (2014a), Kollmann, Kayser and Stöckmann (2015), Marsh (1994), Mayer, Davis and Schoorman (1995), Nan *et al*. (2012) and Sitkin and Pablo (1992).

In order to factor risk into the analysis of pupils' information channel credibility perceptions, it needed to be measured in relation to each of the given scenarios. Risk is a very subjective concept and consequently it was felt that it would be too simplistic to attempt to make participants choose a category such as "serious risk" or "low risk". This study thus provided the participants with a continuum from "serious risk" to "low risk" in

the form of an arrow on which to mark the perceived risk, which was then translated into a numerical value for analysis. The continuum is illustrated in Figure 4.5.

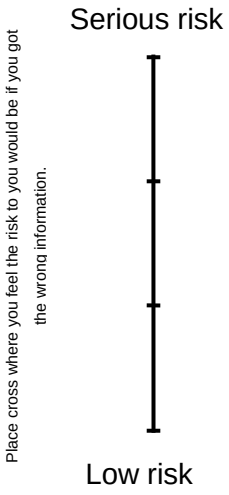


Figure 4.5 Risk perception capture continuum

4.4.4.4 Trusting behaviour

Some of the studies noted in Table L.1 measured trusting behaviour by giving participants a task and then observing their information behaviour (Bruce *et al*., 2003; Case *et al*., 2004; Marton, 2003; Rieh, 2002; Shen, Chiou & Kuo, 2011). This survey, however, focuses not only on information behaviour, but specifically on the perception of the credibility of information channels. Cullen (1997) notes that the participants in that study consulted books more frequently although rating colleagues and experts more valuable, which points to the choice of information channel based on ease of access rather than optimal decision, i.e. satisficing as noted by Agosto (2002) and Simon (1955). To avoid this drawback of satisficing, which could occur during actual information seeking, this study did not require participants actually to find information on the topics and thus to use the information channels. Rather, participants were asked to reflect on what their perceptions of information channel credibility would be in the given circumstances. Thus while trusting behaviour was not measured in this study, the effect of the factors influencing it was recorded by counting **how many** participants trusted a given information channel.

Participants were required to indicate the reason why they chose a particular information channel as most credible. (Note that the term “trust” was used instead of “credibility perception” on the questionnaire to avoid confusion for second-language English-speaking teenagers.) Table 4.2 adapts the set of reasons from Table 2.2 to reflect language that is familiar to high school pupils. The "Pupil language" column was used as

the categories in the questionnaire (see Appendix A). For each scenario participants were expected to indicate a reason for their choice of most credible channel. In the questionnaire an additional block was provided for participants to write down any other reason that was not catered for in the table.

Types of trust Derived from Table 2.2	**Pupil language** Used in questionnaire
Trust without cognitive basis	You trust the **person(s)** who supplied or created the information.
Trust in the credibility of content	You believe the **information** coming from this source can be trusted.
Trust based on past experience	You have used this source **in the past** and trust it.
Trust that there is a common purpose	You believe the type of source has the information **you want.**

Table 4.2 Types of trust rendered in language accessible to pupils

One of the reasons appearing in other research for information being perceived as credible is convenience of access. This is not offered to the pupils in this survey, as credibility is independent of convenience. Pupils did however have the opportunity to list this in the block provided.

4.4.4.5 Credibility perceptions

A differentiation between the actual credibility of information and the perceived credibility has been discussed in Section 4.2. Wathen and Burkell's (2002)

- source characteristics (the perception of the credibility of the originator of the information – in this study source is replaced by channel),
- message characteristics (the perception of the credibility of the actual content)
- receiver characteristics (characteristics of the information seeker like background knowledge, experience, disposition towards trust etc)

are used as a summary of other work and a framework to guide data collection. Generally, studies have not incorporated message credibility and this is the approach that is taken in this study.

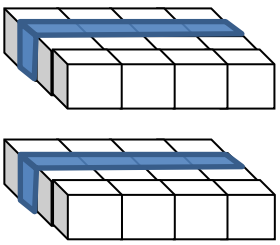
Shen, Chiou and Kuo (2011) used the number of internet transactions as an indirect measure of the perceived trustworthiness of the online product information. Kammerer

and Gerjets (2014) counted the number of trustworthy sources accessed to ascertain the effect of search engine rankings on the credibility of information accessed. This study measured the perceived credibility by asking participants to rank the five most credible information channels for each scenario. The number of pupils choosing an information channel was used as a measure of the perceived credibility of that information channel. Choices were cross-referenced with demographic data, risk perceptions, past experience and stated reasons for choices.

4.4.4.6 Information channels

In the credibility model (Figure 4.3) the trustee is represented by information channels. There are many information channels available to pupils and for convenience researchers have grouped them into various categories (See Section 4.2). For this study, Flanagin and Metzger's (2000) newspapers, magazines, radio, television and the internet were expanded to include interpersonal information channels of peers, family, teachers and experts. The importance of interpersonal information channels to children and school pupils has been shown in studies by Agosto and Hughes-Hassell (2005) and Madden, Ford and Miller (2007).

As has been noted previously (Section 3.4.1 and Section 3.4.2), the role and value of passive information channels (predominantly mass media) could be under-represented as an information channel (Madden, Ford & Miller, 2007.) In the context combinations in Section 3.4.1 studies on mass media as an information channel were discussed under combinations 2, 6 10, 14, 18, 22, 26 and 30. While this is noted, it appears no studies have focused on determining the extent of pupils' reliance on passive information sources. This potential under-representation could be a result of mass media contributing substantially to a participant's general background knowledge of a topic, but because it is a passive information channel, it would not feature in their choice of channel for a specific information need. The perceived credibility of all information channels is relevant to the aims of this study and thus the survey questionnaire evaluated the influence of passive information channels. For this reason Table 4.3 was used to ascertain the participants' primary channel of background knowledge in various categories. (Traditional information needs requiring more active information seeking were also covered, as was discussed in Section 4.4.4.2). Participants were asked to rank the five most important information channels from which they had in the past learned most background knowledge for each of the information



types. All information channels used in this study are listed (including relational channels) so as to obtain comparative data.

	Internet	Newspapers	Television	Magazines	Books	Brochures	Friends	Family	Teachers	Experts
Reference *Facts and information, e.g. on health, science, law, education.*										
Leisure *Entertainment, sport, movies.*										
Commercial *What you can buy, prices, good deals, product information.*										
Current affairs *News, what's going on in your area, the country and the world.*										

Table 4.3 Information channels through which background knowledge was obtained

Channels through which pupils gained their background knowledge will be discussed further in Section 4.4.4.7, with regard to the feedback loop. In the questionnaire these information types were split into four separate tables for the sake of clarity.

Each information type is accompanied by a few examples to clarify the terms, given that some of the participants are not mother-tongue English speakers. Noteworthy too is the inclusion of the term law as reference information. While this might not be of interest to a teenager, often children act as proxy information seekers on behalf of adults.

4.4.4.7 Experience – Feedback loop

Experience is represented in the information channel credibility model as the feedback loop. Agudo, Fernández-Gago and Lopez (2009) have found that trust is dynamic and changes over time, thus reflecting the effect of experience. It is difficult to capture data on experience fully, since experience may be implied by age (Madden, Ford & Miller, 2007), previous exposure to an information channel (Cassidy, 2007; Savolainen & Kari, 2004) or having previously experienced a particular information need (Gunter, 1992). Madden, Ford and Miller (2007) noted a change in information behaviour with age, which could be interpreted as the effect of a feedback loop, although this is not necessarily feedback specific to information behaviour. Some studies get an indirect indication of the

effect of experience from variations in responses from different groups, e.g. Cassidy (2007) found that online journalists perceived the online information channel to be more credible than did print journalists. E-commerce credibility models use past interactions on which to build assessments of credibility (Kim & Ahmad, 2013). The effect of experience has been measured over time (short term – one semester) in a group of pupils by Flanagan and Gallay (2008).

For the purpose of this study the age of the participants, previous experience with the particular information need as well as their previous experience with the information channel (in the form of computer experience in this case) was recorded, as this previous experience could then be cross-referenced with other findings to assess whether either of these factors had an effect. Age and computer experience were recorded in the first general part of the questionnaire. Pupils were asked whether they had had experience of the particular information need of each scenario. Sharifpour *et al*. (2014) investigated the role of prior knowledge in tourist decision making in conjunction with risk perceptions.

As was mentioned in Section 4.4.4.6, the participants' background knowledge might have been derived from passive information channels. This can be cross-referenced with other input factors to ascertain whether the background knowledge has a feedback effect on participants' perceptions of credibility.

Another aspect of the feedback loop which has been touched on previously is feedback from other people. In the context of education, this could be input from teachers about the credibility of an information channel. This could result in one of the school effects mentioned in Section 4.4.6, thus supporting the decision to survey the schools separately.

4.4.5 Data analysis

The aim of this survey was to determine factors influencing pupils' perceptions of information channel credibility and hence their perceptions needed to be measured. Previous studies, as noted in Table 2.1, indicate that a pupil's perceptions of information channel credibility might be affected by factors such as context, type of information needed, pupil characteristics, risk, experience, etc. Thus there are a number of input factors (and numerous different combinations of them) that possibly have an influence on pupils' perceptions of information channel credibility.

In a study done by Höglund, Macevičiūte and Wilson (2004) on data from a wide-ranging survey in Sweden, the correlation between numerous variables (including internet usage and perceptions of information credibility) was assessed and found to be low. Thus some inferential statistics will be applied to this study. The emphasis will, however, be on descriptive analysis.

The study will to a very limited extent collect qualitative data. Pupils had the opportunity to indicate their own reasons for selecting a particular information channel as most credible (Appendix A: final item for each scenario). Scenario 9, where pupils were asked to indicate a recent information need of their own, was also an open-ended opportunity to obtain qualitative data.

The quantitative analysis will comprise two components, namely descriptive and inferential statistics. Pupils were asked to rank their perceptions of information channel credibility in given scenarios. This provided a large amount of ordinal data with many permutations, which is a source of rich descriptive information. For inferential statistics, the variables need to be independent, which requires that one narrows the focus to pupils' first choice of information channel. Chi-squared tests can then be applied to determine goodness-of-fit (see Appendix K for description of this). Decision trees can also point to patterns of factors contributing to pupils' perception of information channel credibility (see Appendix J).

The analysis of the data begins with descriptive statistics to identify combinations of input factors having a noteworthy influence on the perceived information channel credibility. Once the scope of the influential input factors is known, inferential statistics are applied to ascertain the significance of the influence. The statistics package SAS JMP version 12 was used together with the advice of a professional statistician (Jamieson & Azzam, 2012).

4.4.6 Sampling

A sample is used in research in order to obtain data representative of the total population when measuring the whole population is impractical. There are various methods of sampling, which are generally grouped into probabilistic and non-probabilistic sampling. Systematic, cluster, stratified and stage sampling are examples of probabilistic sampling, while convenience, quota, purposive, dimensional and snowballing sampling are non-probabilistic (Cohen, Manion & Morrison, 2000; Freund & Williams, 1977; Tolmie, Muijs & McAteer, 2011).

For this study the sample had to represent more than one type of school, incorporating differing ages and socio-economic backgrounds. In related studies a variety of sampling methods have been used; predominantly convenience samples (Agosto, 2002; Bruce *et al*., 2003; Cassidy, 2007; Chatman, 1996; Flanagan & Gallay, 2008; Flanagin & Metzger, 2000; Metzger, Flanagin & Zwarun, 2003; Rieh, 2002; Shenton & Dixon, 2004; Spink & Cole, 2001; Whitmire, 2003), stratified samples (Gross, 1999; Helligoss & Rieh, 2007; Levin, Whitener & Cross, 2006; Ter Huurne & Gutteling, 2008) and superficially random samples, which are skewed by factors such as access to the internet, etc. (Bates *et al*., 2006; Case *et al*., 2004; Fogg *et al*., 2002; Hovick, Liang & Kahlor, 2014b; Marton, 2003; Savolainen & Kari, 2004). Even samples that are carefully constructed to be random often lose randomness because low response rates may skew the original plan (Gunter, 1992).

In order to get a sample representative of South African pupils, a cluster sample was taken from schools across the economic spectrum. Three schools were chosen from a city in the Mpumalanga province of South Africa. They are School A representing an independent school catering for children from wealthier middle-class families, School B representing a fee-paying state school catering for a wide economic spread of children and School C, a non-fee-paying school for children from working class families, often in poverty and unemployed circumstances. The provincial education department classifies schools according to the quintile in which the school fees fall. (All schools in the province are ranked from the top according to the level of their school fees and then the list is split into five groupings.) School A is in the top quintile, school B in the fourth quintile and school C in the bottom quintile. On a macro-level this is broadly representative of the urban school population in South Africa. To test the effect of age, one does not have to sample every age in the range. In South Africa, high schools range from grade 8 (entry grade) to 12 (exit grade) and pupils' ages generally range from 13 years old to 19 or more in certain cases. Only grade 8 and grade 12 pupils were included in the study, giving as great a spread of ages within a high school as possible. Within the grades it was possible to sample all pupils.

Each participating pupil can be taken as a person-in-context. According to the Wilson (1999) model there is then also a larger (macro) context and often a meso-context. The country (South Africa) and the region (Mpumalanga province) will be the macro-contexts on various levels. The meso-context will be the school. For the purpose of this study, data on each school as a meso-context was requested from the principal of each school (see principal interview schedule in Appendix D). This will include information on the

socio-economic profile of pupils in general, school resources and whether the school is an independent school (fully funded from fees) or state school (state-funded with optional nominal school fees).

Macro-context		Country: South Africa, Region: Mpumalanga province
Meso-context	School A	Independent school Pupils predominantly middle class Number of pupils: 507 Fees: R60 000 per annum
	School B	State school Pupils from a wide spread of economic backgrounds Number of pupils: 1158 Fees: R15 00 per annum
	School C	State school Pupils predominantly from working class or unemployed families Number of pupils: 881 Fees: Non-fee-paying
Micro-context	Pupils	School A has 56 grade 8 pupils and 105 grade 12 pupils School B has 217 grade 8 pupils and 229 grade 12 pupils School C has 228 grade 8 pupils and 82 grade 12 pupils

Table 4.4 Contexts from which sample was drawn

The next decision needing discussion is the size of the sample. In educational quantitative studies a sample size of 30 participants has been noted to be sufficient (Cohen, Manion & Morrison, 2000; Montgomery & Runger, 2007). In this study there is substantial interplay between many factors influencing information channel credibility, as noted in Section 3.4. A larger sample was thus chosen, to accommodate the many possible combinations. The total number of pupils in the three schools was 2 546. Focussing on just grades 8 and 12 reduced this number to 501 and 416 respectively, giving an overall sample size of 917.

4.4.7 Reliability

Reliability is a measure of whether a test result will produce the same or a similar result if repeated. It is essentially a measure of whether the test is administered consistently

(Cohen, Manion & Morrison, 2000:117; Leedy & Ormrod, 2014; Pickard, 2013; Tolmie, Muijs & McAteer, 2011:146). Reliability is the predominant reason why this survey did not make the pupils actually find information, as the effect of satisficing would introduce the possibility of unreliable data being recorded. Another aspect that could have affected reliability is the actual administration of the survey. A survey of this size needed to be administered by various supervisors in different venues. In order to minimise the possibility of affecting reliability, a common instruction sheet was handed to each survey supervisor (i.e. teacher) administering the survey to read out to the participants so every pupil had the same set of instructions (see Appendix F). The factors listed on the instruction sheet were compiled as a result of lessons learnt (Appendix E) from the pilot study (Tolmie, Muijs & McAteer, 2011:146) involving 20 pupils carried out prior to the main study. These lessons were incorporated to enhance reliability.

4.4.8 Validity

Whereas reliability is a measure of how the test is administered, validity is a reflection of how good the design of the test is (Leedy & Ormrod, 2014; Pickard, 2013). Validity is a reflection of whether the test measures what it says it measures.

In the literature there are various lists of validity criteria (Cohen, Manion & Morrison, 2000:105; Morgan *et al*., 2013:112; Crocker, 1971:44; Tolmie, Muijs & McAteer, 2011:149). For this study internal, external, construct and predictive validity will be discussed.

Internal validity is the measure of whether the test measures what it says it measures. The reason for making the participants in this survey rate information channel credibility rather than observing what they actually do while searching is to ensure the survey's validity because actual information behaviour could be influenced by satisficing and ease of access, making the findings less valid for the purposes of this study.

External validity is the measure of the generalisability of results. This survey aims for external validity by means of triangulating data results with findings of other researchers in other parts of the world and other target groups.

Construct validity refers to the accurate articulation of the theories into what is being measured. Care was taken to align this survey's composition with that of other researchers' work and to avoid actions that would counter the aim of the survey.

Predictive validity indicates whether results obtained from the test can be used to predict future results reliably. The purpose of this study is not to predict pupils' choices but rather to inform school-based interventions to guide pupils. Even though this aspect of validity was not addressed specifically, if the data corresponds to findings by other researchers this would be an indication of predictive validity.

4.4.9 Ethics clearance and dealing with ethical issues

Great care was exercised in respecting the rights of the school pupils as minors (younger than 18) involved in this survey. Firstly, permission was obtained from each of the schools participating in the survey for their pupils to be involved. Each of the principals was supplied with a copy of the proposed questionnaire (Appendix A) and the informed consent form that parents and pupils had to sign (Appendix C).

Written permission from the principals (Appendix B) accompanied the application to the faculty committee for Research Ethics and Integrity of the Faculty of Engineering, Built Environment and Information Technology of the University of Pretoria. They scrutinised the questionnaire from an ethical perspective.

Once permission from the ethics committee had been secured (Appendix G), parents and pupils were requested to sign an informed consent form indicating their voluntary participation (see Appendix C). Only on receipt of this consent form were the pupils allowed to complete the survey questionnaire. For ease of administration all pupils (even those over 18) were subject to the same requirements.

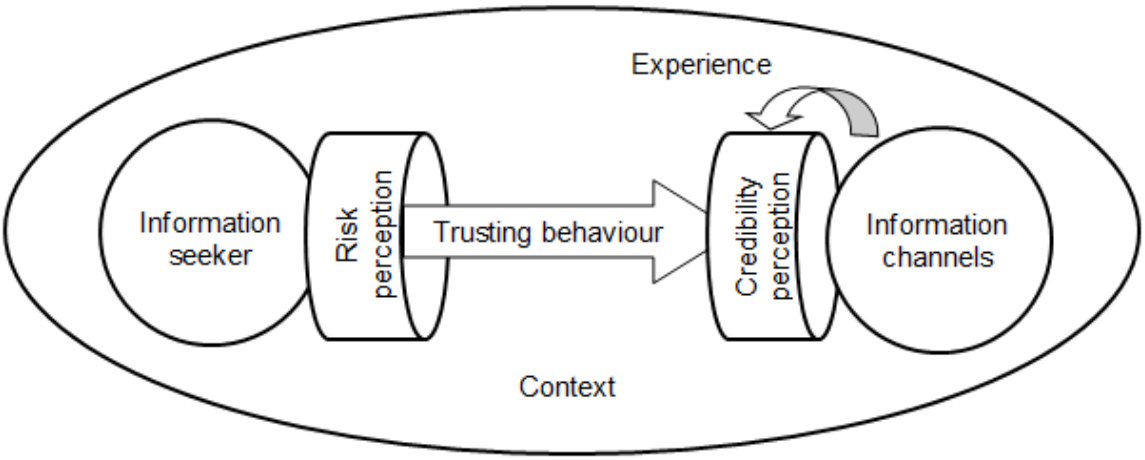
The researcher committed to the confidentiality of the results. No school or pupil was to be identified in any subsequent publication of results. Results are also reported in aggregate format and not per individual.

4.5 CONCLUSION

This chapter began by using the literature analysis from Chapters 2 and 3 to develop an information channel credibility model with which to align the empirical component of this study. Then a table of previous empirical studies was used, giving the target group, background to methods researchers used and the context and findings of the studies. In addition to answering the research question of : What has been reported on perceptions of information credibility and information channel credibility for school pupils, students

and adults and professionals in information-intensive environments, it also provided guidance on what methods to use in the empirical survey.

The credibility model, previous methods and the research questions were all used to synthesise an approach to the empirical methodology for this study, culminating in a questionnaire being presented. Table 4.5 is a summary of the relationship between the components of the credibility model and the questionnaire (Appendix A) showing how the questionnaire caters for all aspects and will facilitate the answering of the research question: What factors influence school pupils' perceptions of information channel credibility?



Information seeker	These are the pupils participating in the survey and the questionnaire will ascertain their demographic information (age, gender, grade and weekly internet usage) in the first part of the questionnaire.
Risk perception	Every information need has an associated risk in the mind of the seeker. This will be recorded by the participant marking the perceived risk for every scenario on a continuum from "low risk" to "serious risk"
Trusting behaviour	This aspect is deliberately omitted in this study, as there is reference in other studies to extenuating factors such as ease of access that blur an information seeker's actual behaviour in using information channels.
Credibility perception	The perceived credibility of information channels will be measured by the number of participants selecting a channel as one of their most credible information channels.
Information channels	Information channels provided in the questionnaire for participants to select from have been chosen to cover the typical information channels available to pupils. These are the internet, mass media, print material and interpersonal sources. These have, however, been broken down further in certain cases to facilitate differences, for instance between types of interpersonal information channels such as friends, family members, teachers etc. Information channels are an external given so school-based interventions cannot influence them but one can deepen pupils' awareness of the spectrum of credibility.
Experience	There are two aspects of a pupil's experience that could have a feedback effect; the pupil's experience of a particular scenario and the pupil's experience of the information channel. Thus the effect of the feedback loop in a trust relationship will be measured in this questionnaire in three ways. Firstly, for every scenario, participants record whether they have experience of this particular information need. Then for that particular scenario, one of the reasons for selecting a particular information channel is that they have previous experience of it. Thirdly, recording the channels through which pupils gained their background knowledge will enable one to assess the effect of this experience as a feedback effect. School-based interventions can address levels of pupil experience.
Context	The context is derived from the context matrix in Figure 3.7. This is built into the design of each scenario presented and covers whether the information need is imposed or self-generated, as well as the type of information being looked for, i.e. reference, commercial, current affairs or leisure and the information channels available to the pupil.

Table 4.5 Relationship between credibility model and questionnaire

It is relevant at this point to include a table reconsidering the research questions to ascertain whether the literature already covered in combination with the proposed survey can answer the questions.

Main research question: **How can school pupils' perceptions of information channel credibility inform school-based interventions?**	
Research Sub-Questions	**Findings or how to measure**
What has been reported on perceptions of information credibility and information channel credibility? ○ School pupils ○ Students and adults ○ Professionals in information-intensive environments	See literature analysis in Chapter 2 specifically Table 2.3 and Table 2.4 and summarised studies in Table L.1. Section 3.4.3 covers how information-intensive professions emphasise conflict of interest, information from a source with self-regulation, educating the public to recognise information credibility criteria as well as internal and external consistency of information.
How can trust models guide a study of pupils' perceptions of information channel credibility?	See Table 2.1. They indicate that risk, credibility, feedback and context have a large role to play.
What factors influence school pupils' perceptions of information channel credibility?	See Table 2.1 for factors influencing perceptions of information credibility. Figure 2.9 and Figure 4.3 collate influences into a credibility model. The empirical part of this study uses those factors as a framework to analyse pupil's perceptions of the credibility of information channels in various contexts. See questionnaire in Appendix A.
What school-based interventions could be recommended to address the shortcomings in the perceptions of pupils that can prepare them to meet the information requirements of adulthood?	Once pupil's credibility preferences, with reasons and associated risk perceptions, have been collected from the survey, interventions to encourage them to question these preferences as well as other interventions may be suggested. Literature pointed to the role of risk, the need for different approaches in differing contexts and the role of pupils' experience.

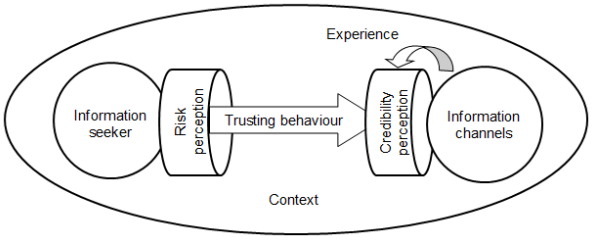
Table 4.6 Research question as addressed from the literature

CHAPTER 5

FINDINGS FROM QUANTITATIVE AND QUALITATIVE DATA

5.1 INTRODUCTION

This chapter reports on the empirical component of this study. The main research question of this study was, "How can school pupils' perceptions of information channel credibility inform school-based interventions?" A sub-question takes this a step further by asking, "What factors influence school pupils' perceptions of information channel credibility?" The literature was consulted for other studies looking at similar topics for both pupils and adults, which were discussed in Chapter 2. Using an information channel credibility model (Figure 4.2), findings from this exercise were incorporated into a survey questionnaire (see Appendix A), which recorded pupils' perceptions of information channel credibility[4]. The data collected on pupils' perceptions was then analysed by comparing the effect of various components of the information context as well as the person in context (i.e. the context of the pupil) to the credibility perceptions. (Information context and person in context are explained in Chapter 3.)



The chapter begins by describing the survey process and then follows the summarised structure of the information channel credibility model (Figure 4.2), analysing the effect each of the components has on pupils' perceptions of information channel credibility. Encompassing all components is the context. This can further be differentiated into the person in context and the information in context. Characteristics of the pupils will be covered, namely age, grade, gender and channels through which they gained their current knowledge. The effect of risk perception on information channel credibility perception will be analysed, followed by the effect of whether the pupil had experience of the information need in the past. The credibility perceptions of the information channels are measured by pupils' rankings for given scenarios and this data is thus spread throughout all sections, as well as a separate section focused on the reasons for pupils' choices. In each section the

[4] The questionnaire completed by the pupils used the term "information sources" instead of "information channels" (see Appendix A). The rationale for this decision is explained in Section 5.4.1

diagram of the information channel credibility model will be shown with the relevant section highlighted for illustrative purposes.

5.2 THE SURVEY

5.2.1 How the survey was conducted

Data for this study was collected by means of a paper-based self-administered questionnaire (see Appendix A). Three high schools in the same city of the Mpumalanga province of South Africa were specifically chosen in an urban context to give a spread of participants across the socio-economic spectrum. These schools were selected as contextualisation for the pupils; it was never intended to do a comparison between the schools. Details on the reason for the selection are covered in Section 4.4.6. and the meso-context of the schools is discussed in Section 5.3.1. The survey was conducted in the last two weeks of May 2015.

Clearance for the survey was obtained at various levels. The principals of each of the participating schools gave their approval after being briefed on the purpose and content of the survey – see Appendix B for template of letter of consent from principals. Then the Faculty Committee for Research Ethics and Integrity of the Engineering, Built Environment and Information Technology Faculty of the University of Pretoria gave approval from an ethical perspective – see letter in Appendix G. The pupils and their parents also had to sign an informed consent form for pupils to participate – see Appendix C for informed consent form.

The top and bottom grades of South African high schools, grades 8 and 12, were chosen to give as big an age spread as possible. Furthermore, a census approach was chosen to include all pupils in the selected grades, thus inviting all pupils in the grades to participate. One of the ethical conditions of the University of Pretoria is that pupils are not to be coerced to participate. This is in line with adherence to requirements for ethical conduct of research as reported by similar projects, such as those of Lu and Yuan (2010) and Meyers, Fisher and Marcoux (2007). Table 5.1 shows the number of pupils from each grade and each school that participated.

Unfortunately some problems, falling outside the control of the researcher, were experienced. School A agreed to participate but in spite of several follow-up efforts and numerous visits, only 18 questionnaires were returned to the researcher. It is a South African government requirement that research participants younger than 18 need signed

permission from their parents. This complicated the recruitment of pupils, as school A has a large number of boarding pupils (i.e. pupils not staying with their parents.) Some pupils did not return consent forms and in one case parents refused permission for their child to participate. An interview was conducted with each of the principals prior to the distribution of the questionnaires. From the interviews (discussed in Section 5.3.2) it appears that the demographics of school B pupils actually covered the reason for which school A had originally been included in the survey. School A is an expensive independent school catering for wealthier families and was included to represent the top end of the economic spectrum. Even though School B's fees are relatively low, the pupils came from a broad economic spectrum, including wealthy families, thus to some degree similar to those of school A. The researcher decided to proceed even though the bulk of the data was collected from schools B and C, since even if a fourth school was approached, there was no guarantee that the same problems as those experienced with school A would not be repeated and time for completion of the study was becoming an issue.

The manner in which the survey was carried out was as follows: Firstly the informed consent forms were delivered to the schools to be taken home by the pupils and signed by the pupils as well as a parent. As noted, some pupils were not resident with their parents and this would account for some of the low return rates. Three days after the delivery of the informed consent forms, copies of the questionnaires were delivered to the school in order to give sufficient time for parental consent but not too much time for the matter to be forgotten. Schools were then given two weeks in which to find a suitable day to conduct the survey. The teachers who needed to administer the completion of the questionnaires were briefed on what the researcher required, their responsibilities and the importance of informed consent from the pupils as well as a parent for all pupils who participated. Apart from an oral explanation by the researcher, they were also given an instruction sheet to ensure consistency across classes and schools. See Appendix F. The reason the researcher could not administer the survey himself was the large number of classes and the grades involved, combined with the busy programme of each of the schools. The administration of the questionnaire could be done on any day convenient to each of the schools. The researcher collected the questionnaires and forms of informed consent at the end of the two-week period. Each questionnaire was numbered for cross-checking and verification purposes and then the data was entered into a pre-prepared Excel spreadsheet. Once the data from questionnaires had been captured, the questionnaires and signed forms of informed consent were bundled, sealed and stored in a safe. Data on the original spreadsheet was also backed up and stored off-site.

Confidentiality of the information was of paramount importance and forms were only handled by the researcher and one data capturer. Once data was in the spreadsheet it was anonymous. No names of pupils were required on the questionnaire.

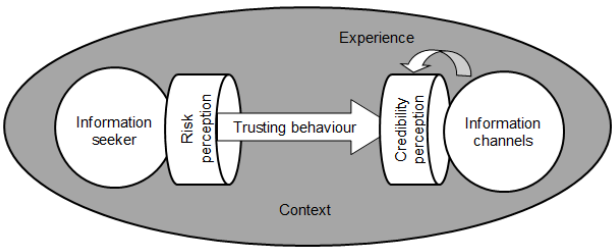
5.2.2 Number of participating pupils

The potential number of pupils who could participate from the three schools was: 161 for School A, 446 for School B and 310 for School C, thus a total of 917 pupils. This number comprised 501 Grade 8 pupils and 416 Grade 12 pupils. Because of the problems noted in Section 5.2.1, actual participation was only 548 pupils (only a 60% return rate), including 328 from Grade 8 and 220 from Grade 12. The responses are shown in Table 5.1.

	School A	School B	School C	Total
Grade 8s in the school	56	217	228	501
Grade 8s who participated	**18**	**151**	**159**	**328**
Grade 12s in the school	105	229	82	416
Grade 12s who participated	**0**	**196**	**24**	**220**

Table 5.1 Pupil participation according to school and grade

5.3 THE INFORMATION SEEKER IN CONTEXT



The pupil/information seeker exists in a context. At the macro-level this is in a city in the Mpumalanga province of the country of South Africa. This section will look at the meso-context (school) and micro-context (individual pupil demographics) in order to see possible effects of the context on perceptions of information channel credibility. More detail about context was provided in Section 4.4.6.

5.3.1 Participating schools as meso-context

The schools as a meso-context (see Section 4.4.6) were chosen specifically to give a broad representative spectrum of urban South African high school pupils. The choice of schools was not for comparison and the details provided in Sections 5.3.1.1 to 5.3.1.3 are thus only for contextualisation. The information contained here was gathered from

the formal interview conducted with the principals before the survey was conducted (see Appendix D). Each of the three principals was provided with the interview schedule beforehand. Handwritten notes were taken during the interviews. In addition to the information gathered during the interviews with principals (reported in Sections 5.3.1.1 to 5.3.1.3), the internet usage as reported by participating pupils in the questionnaire survey is included in the discussion of the schools as meso-context for the pupils. It is included here to provide a broader contextualisation of pupils in the meso-context of the schools; in the main data analysis (Section 5.4 to 5.7) there is no differentiation between or comparison of the schools.

5.3.1.1 School A

This is a well-resourced independent school catering for pupils from wealthy middle-class families. School fees are in excess of R60 000 per annum for tuition, which is in the top quintile. (An exact figure is not given as there is a sliding scale with certain concessions.) The high school has two computer laboratories (50 computers in total) for research, Information Technology (IT) and Computer Applications Technology lessons. Computer lessons are thus for pupils studying computers as a subject rather than information literacy. There are also computers in the well-resourced media centre for research as well as computers and data projectors in many of the classrooms. Computers are connected to uncapped internet data via Wi-Fi and fibre.

The pupil numbers for the participating grades are shown in Table 5.2.

	Boys	Girls	Total
Gr 8	28	28	56
Gr 12	46	59	105
School A total	235	272	507

Table 5.2 Number of pupils in participating grades in School A

The principal commented on problems the school experiences with parental responses to communications. This was also experienced in this study and contributed to the low response rate for School A. (At School A the participants were all from grade 8; no participation could be obtained from grade 12s). Weekly internet usage for this school, as reported in the questionnaire by the 18 participating pupils, ranged from 0 to 21 hours, with a mean of 6 hours per week.

5.3.1.2 School B

This is a large (1158 pupils) well-resourced school and even though it is a state school, it is allowed to charge school fees in order to maintain good standards. School fees are R15 000 per annum for tuition, which places it in the fourth quintile for fees in the province. It draws its pupils from a very broad economic spectrum, with relatively wealthy families right through to orphans for whom school fees are waived. The pupil numbers for the participating grades are shown in Table 5.3.

	Boys	Girls	Total
Gr 8	87	130	217
Gr 12	104	125	229
School B total	521	637	1158

Table 5.3 Number of pupils in participating grades in School B

The school has 80 computers for pupil use. These are used in IT and Computer Applications Technology lessons, as well as in the well-resourced media centre for research in the afternoons. Computer lessons are thus for pupils studying computers as a subject rather than information literacy. Computers are connected to uncapped internet data lines. The principal mentioned that most of the pupils arrive at the school computer/smartphone literate; the statement was not substantiated or quantified. Pupils do receive information literacy lessons on the use of the media centre.

Weekly internet usage as reported in the questionnaire by the 347 participating pupils for School B ranged from 0 to well over 100 hours per week, with a mean of 18 hours per week[5].

5.3.1.3 School C

While School C is a state school and caters for the economically challenged end of the community, the buildings are new and modern.

The pupil numbers for the participating grades are shown in Table 5.4.

[5] The reason for the apparently high value for internet usage is that it includes mobile technology usage, covering social media and communication programmes.

	Boys	Girls	Total
Gr 8	95	133	228
Gr 12	49	33	82
School	421	460	881

Table 5.4 Number of pupils in participating grades in School C

The school has 881 pupils, split roughly evenly between boys and girls. See Table 5.4 for exact split. There are 228 grade 8s in this school and 82 grade 12s.

A computer laboratory (15 computers[6]) is available for pupils who have chosen to take Computer Applications Technology in grades 10 to 12 and they get training on various programs. The rest of the pupils do not get IT training. While no empirical data was collected, relatively few have access to computers or the internet outside of school[7]. Weekly internet usage as reported in the questionnaire by the 183 participating pupils ranges from 0 to 72 hours, with a mean of 7 hours per week.

There is a library but there are no formal lessons on using it. Pupils wishing to use the library facilities do so in their own spare time.

5.3.2 Number of participants responding in each section of the questionnaire

Questionnaires were handed to the school and administered by individual teachers. They were briefed as explained in Section 5.2.1 and provided with written guidelines (Appendix F). While 548 questionnaires were returned, some had sections that were not completed in a manner that could be used for data capturing. Table 5.5 gives an indication of the number of pupils whose data could be used in each of the different sections of the questionnaire. Thus the N value for any particular section varies and the numbers shown in Table 5.5 will be reflected in each subsequent table where relevant. All pupils completed all demographic details (with the exception of three participants who omitted their ages.) As mentioned earlier, the questionnaire is included in Appendix A.

[6] In informal chats with some teachers, they mentioned that often a number of the computers are not working.
[7] Informal chats with teachers revealed that pupils had little computer access outside of school apart from cell phones.

Section of the questionnaire		School A	School B	School C	Boys	Girls	Grade 8	Grade 12	Total
Demographic information		18	347	183	236	312	328	220	548
Source of background knowledge	Reference	15	324	91	180	250	239	191	430
	Commercial	16	328	91	184	251	257	197	435
	Leisure	16	328	91	183	252	240	195	435
	Current affairs	16	328	89	184	249	238	195	433
Scenarios	1. Cell phone purchase	16	312	76	167	237	226	178	404
	2. AIDS project	16	319	74	168	241	222	187	409
	3. Municipal politics	16	244	75	138	197	222	113	335
	4. Movie essay	16	306	73	160	235	220	175	379
	5. TB concern	16	264	70	135	215	217	133	350
	6. Cell phone rates	16	249	71	141	195	218	118	336
	7. Talent show	17	241	67	125	200	215	110	325
	8. Political project	17	240	64	130	191	212	109	321
	9. Open ended	12	181	4	59	138	97	100	197

Table 5.5 Number of pupils completing each questionnaire section

For the section on scenarios the numbers reflected in Table 5.5 are for the number of pupils completing the main ranking exercise for each scenario. However, some of them did not answer all the sub-questions for each scenario, for example recording whether they had previous experience of the scenario, their risk perception or their reason for choosing their most credible information channel. This will be reflected in the tables and discussion when reporting responses for these questions.

5.3.3 Demographic data

Demographic information about each pupil's age, gender, grade and internet usage was recorded in the first section of the questionnaire (see Appendix A) in order to get a fuller

picture of their personal micro-context. This is in line with the discussion in Section 3.2.4. Findings are reflected in Tables 5.6 to 5.9 and Figure 5.1.

5.3.3.1 Gender data

Table 5.6 shows the overall gender distribution for the 548 participants, while Table 5.7 splits it up across the two grades sampled.

Male	Female
236	312
43%	57% [8]

Table 5.6 Gender distribution

Grade 8 N=328		Grade 12 N=220	
Male	Female	Male	Female
137	191	99	121
42%	58%	45%	55%

Table 5.7 Gender distribution across grades

Table 5.8 records the distribution of gender of the participants across the schools and grades.

	School A		School B		School C		Total
	Grade 8	Grade 12	Grade 8	Grade 12	Grade 8	Grade 12	
Male	7	0	60	86	70	13	236
Female	11	0	91	110	89	11	312

Table 5.8 Gender distribution across grades and schools

Although more girls participated, it was considered a reasonable balance since the aim of the study was to consider the impact of gender and not to do a comparison on gender.

5.3.3.2 Age data

Table 5.9 shows age distribution across gender and grade. There are small discrepancies with the numbers of participants given in Table 5.6 and Table 5.7, since

[8] When percentages are included for comparative purposes, they are rounded to the nearest digit.

three pupils did not record their ages (two males and one female). Hence the total number of participants is 545 here, not 548. Generally South African pupils begin school in the year they turn 7, which would translate to pupils being 13, turning 14 in their grade 8 year and 17, turning 18 in their grade 12 year. Pupils older than this would either have started school late or repeated one or more years. Pupils younger than this would probably have transferred from a different education system, e.g. from a neighbouring country.

N=545	Grade 8		Grade 12		Total for both grades		
Age	Male	Female	Male	Female	Male	Female	Total
12	2	3	0	0	2	3	5 (1%)
13	27	72	0	0	27	72	99 (18%)
14	55	81	0	0	55	81	136 (25%)
15	32	23	0	1	32	24	56 (10%)
16	13	6	0	5	13	11	24 (4%)
17	4	5	26	62	30	67	97 (18%)
18	2	0	54	50	56	50	106 (19%)
19	1	1	15	2	16	3	19 (3%)
20	0	0	3	0	3	0	3 (1%)
Total	136	191	98	120	234	311	545 (100%)[9]

Table 5.9 Age distribution across gender and grades

This same data is illustrated graphically in Figure 5.1 from the perspective of age and grade.

[9] Occasionally a set of rounded percentages do not add up to 100%. This is a result of more of the set happening to have been rounded down than up and is of no material consequence (other than neatness.)

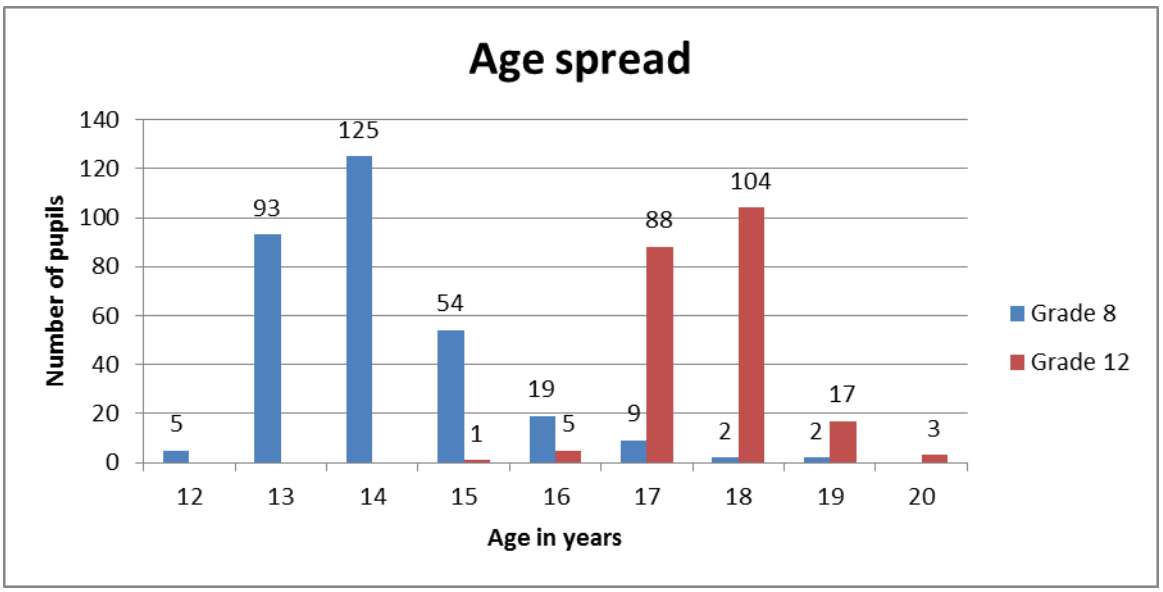


Figure 5.1 Age spread of the participants

From both perspectives the data shows clear bi-modal peaks at 14 years old and 18 years old, which correspond to the two grades chosen for this study, namely the high school entry grade (8) and the exit grade (12). The 13- and 17-year-old pupils would thus generally be turning 14 and 18 later in the year. For this reason, when analysing the effect of age on credibility perceptions, it is justified to focus on the 13/14-year-olds as representatives of a younger group and 17/18-year-olds for an older group. There are thus 235 in the younger group and 203 in the older group. In this way any other distractions possibly caused by the reason for over-aged and under-aged pupils in a particular grade are eliminated. By taking these groups to represent the age factor, other influencing factors can be eliminated.

5.3.3.3 Internet usage data

An important component of pupils' context is the access they have to information (see Chatman's (1996) work on "outsiders".) The participating schools were specifically chosen so as to get a spread of pupils across the economic spectrum, which might have some impact on internet exposure. Similarly the schools themselves ranged from providing substantial access to IT and the internet to a school that provided no internet access. The intention of this part of the study is to consider the effect of internet exposure on information channel credibility perceptions since much has been researched on changing patterns of information access and availability but little on its effect on credibility perceptions.

Pupils were asked about their weekly internet usage. Findings are presented below. In Section 5.5.4 this will be cross-referenced with perceptions of information channel credibility. In the planning of this survey, note was taken of Flanagin and Metzger's (2000) mention that the "internet" was a very broad category incorporating many subsections. The purpose of recording weekly internet usage was to distinguish pupils with extensive internet experience from those without it. It was never intended to analyse the finer nuances of the different aspects of the internet currently available (e.g. web, search engines, social media, Twitter, e-commerce).

The time pupils indicated that they spent on the internet ranged from 0 hours to 142 hours per week. This seems a lot, but the internet includes social media, YouTube, movies as well as conventional information seeking and this can all be accessed by desktop computers, laptops, as well as mobile devices. Two of the schools also offer internet access in the media centre. The mean value for internet access is 14 hours with a mode of 1-10 hours. Figure 5.2 shows the spread of internet usage.

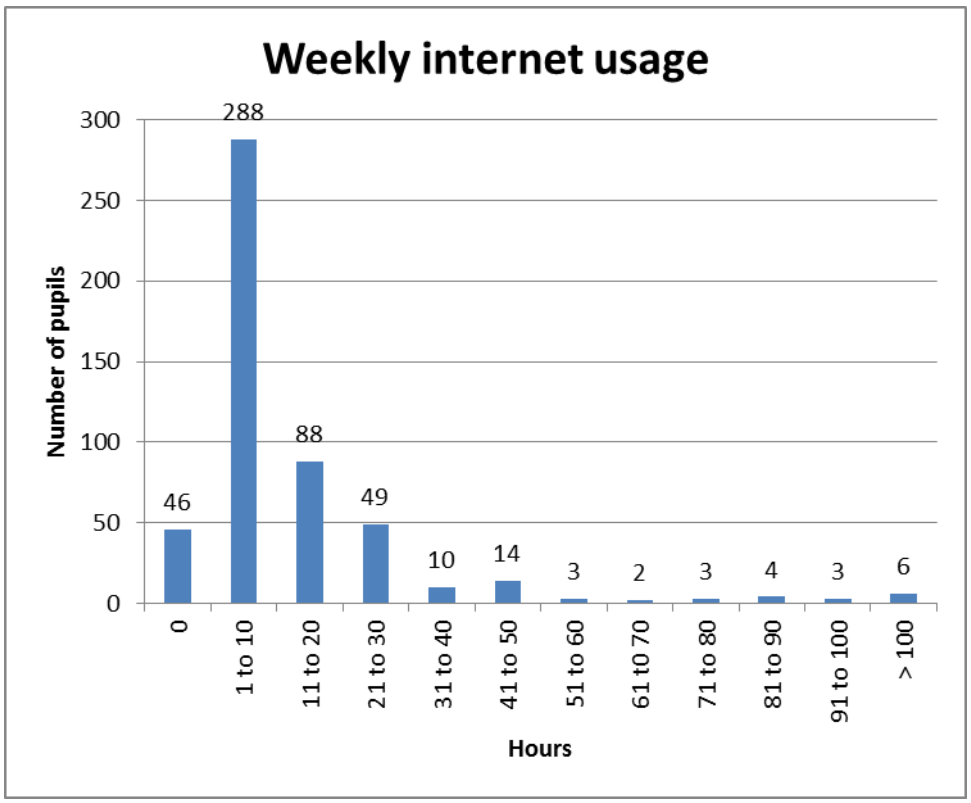


Figure 5.2 Weekly hours of internet usage

Figure 5.2 represents a range of hours spent per week on the internet reported by participating pupils. The highest number of pupils spend between 1 and 10 hours per week using the internet (288/516 for 1-10 hours, 56%). Forty-six pupils (46/516, 9%)

recorded a zero for their internet usage; responses from these pupils will be given specific attention in Section 5.5.4 when considering the effect of internet usage on pupils' perceptions of the credibility of information channels. It also points to pupils who might not have access to the internet.

In Figure 5.3. the weekly hours of internet usage are mapped against age.

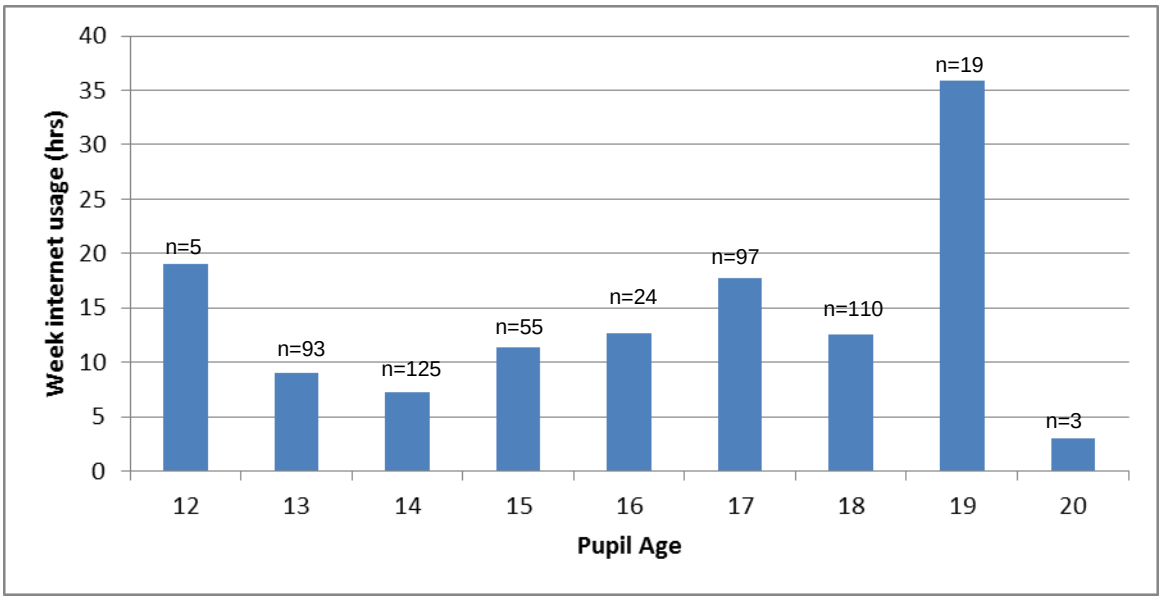
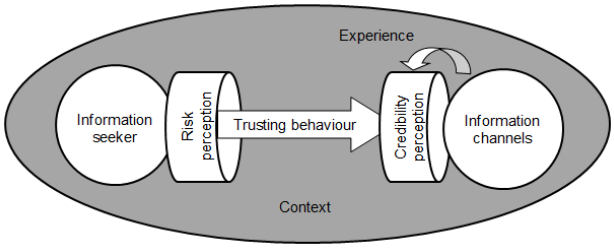


Figure 5.3 Mean weekly internet usage according to age

The most ardent internet users are the 19-year-olds and the least active ones are the 20-year-olds and 14-year-olds.

5.4 INFORMATION IN CONTEXT



The context of information needs and the type of information were captured in a series of scenarios that reflected findings from the literature, as discussed in Section 3.2. and Section 4.4.4.2. Eight scenarios were presented to participants (see Appendix A). Each scenario includes the origin of information need (i.e. whether it is self-generated or imposed; these terms were, however, not used), the type of information needed (reference, commercial, leisure or current affairs) and the information channels through which such information can be accessed. A ninth scenario was provided as an open-ended opportunity for pupils to record their own information need – thus a truly self-generated

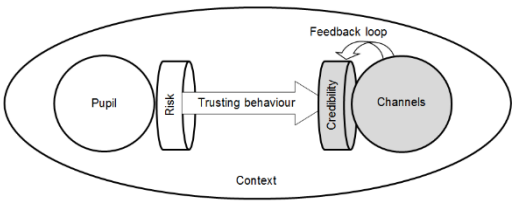
information need. Although the term self-generated is used for scenarios 1, 3, 5 and 7, these are in fact simulated self-generated information needs; more detail on the rationale for these can be found in Section 1.8 on Clarification of concepts: Self-generated tasks. This section will begin by presenting the pupils' perceptions of information channel credibility (i.e. the five information channels that they would trust most ranked in order from 1 – 5, with 1 being the information channel they would trust most for each of the scenarios; i.e. the information channel they consider most credible). Then the effect of the origin of the information need (imposed or self-generated) and the type of information needed (reference, commercial, leisure, current affairs) will be considered.

The effect of pupil characteristics (Section 5.5), risk perception (Section 5.6) and the feedback loop (Section 5.7) on pupil perception of information channel credibility will be discussed in separate sections dealing with the respective issues.

5.4.1 Perceptions of information channel credibility for the scenarios

Before beginning this section, it is appropriate to recall the clarification covered in Section 2.4. Information credibility perceptions do not imply information credibility. This study analyses pupils' *perceptions* of information credibility.

In the trust model being used here the credibility component and the component of the channels are both instrumental in the assessment of pupils' information channel credibility perception. The questionnaire presented the pupils with eight scenarios depicting information needs that a high school pupil could typically expect to experience (explained in more detail in Section 4.4.4.2). They were then asked to evaluate the credibility of 10 information channels that are typically used to find information for such scenarios. In the sub-sections to follow, responses for each scenario with regard to pupils' perceptions of information channel credibility will be reported and discussed briefly.



> *In the questionnaire the terminology was deliberately kept as simple as possible so as not to introduce confusion for the teenagers, many of whom were second-language English speakers. Two terms that warrant mention here are "credibility" and "information channels". In the questionnaire these were replaced by "trust" and "information sources", which it was felt would be more accessible to the participants.*

Another important consideration is the categorisation of certain scenarios as self-generated. Section 4.4.4.2 discusses the fact that although any task set by someone other than the seeker is imposed, these tasks are set so as to simulate self-generated tasks and in addition to this Scenario 9 is an opportunity for pupils to record their own self-generated information needs. For the purpose of the study, this is referred to as a truly self-generated study.

In order to determine reasons for pupils' choice of their most credible information channel, they were given four possible options from which they had to select one. A space was provided for them to write down their own reason in the event that none of those provided was applicable. Where pupils did write down their own "other reasons", these were often a re-wording of one of the given options. A full list of alternate reasons given by pupils is provided in Appendix H. These will be analysed in Section 5.8.

Table 5.10 shows the number of pupils who provided information for each of the aspects of each scenario. There were 548 participants. However, not all participants completed the questions in each of the sections and thus the number of pupils providing information on each aspect varies; the N value will be different and this is reflected in each of the discussions of the specific scenarios.

N=548	1. Cell phone purchase	2. AIDS project	3. Municipal politics	4. Movie essay	5. TB concern	6. Cell phone rates	7. Talent show	8. Political project
Pupils recording experience of this scenario	410	394	390	388	392	383	383	374
Pupils recording perceptions of risk for this scenario	352	351	278	326	291	266	267	257
Pupils recording perceptions of credibility for this scenario	404	409	335	395	350	336	325	321
Pupils recording reasons for their top choice	341	341	265	325	284	271	269	264

Table 5.10 Number of pupils recording information on scenarios

Looking down the columns of Table 5.10 gives an indication of what the pupils were comfortable or able to answer. Generally the question about whether they had experience with seeking such information and the ranking of their credibility perceptions elicited the highest response. However, recording their risk perceptions and their reasons for making a particular choice prompted lower participation. This could be a result of various factors, such as that they are not confident about analysing their own motivations.

For each scenario pupils were asked to record whether they had previously needed to find information on the issue for the particular scenario, e.g. buying a cell phone, what they perceived the risk was of acting on incorrect information, their perception of the credibility of the listed information channels (by ranking the top five most credible information channels for that particular information need; 1 being the most credible) and their reason for choosing the information channel they ranked as most credible, i.e. number 1 in their list of the most credible information channels. In assessing the risk involved in using incorrect information for a scenario, pupils were asked to rate their perceptions of the risk associated with the scenario by marking their answers on a number line representing a continuum going from low risk on the one end to serious risk

on the other (see Appendix A). These responses were then grouped into three categories – low, medium and serious risk.

On a technical note, in both the background knowledge section and the choice of information channel, participants gave their first choice a rating of 1 and so on till their fifth choice was rated 5. This presents a problem for the sixth to tenth positions (not recorded), which then by default have a value of zero – numerically better than the best position. In order to correct for this, the mean of position 6 – 10 is calculated, yielding a value of 8, which was inserted into every non-rated category. Based on the advice of a qualified statistician, this approach was used for descriptive statistics to give a broad perspective of the data collected.

For each scenario, the initial analysis is descriptive statistics for the purpose of giving a rich, broad overview of the data collected. Then inferential statistical analysis is applied to ascertain significant relationships between components of the trust model and pupils' perceptions of information credibility. In order to apply inferential statistics, one generally needs independent variables and while rankings of 1 – 5 give a rich overview of pupils' information channel credibility perceptions, they are not independent. Thus for this part of the analysis, the focus was narrowed to pupils' choice of the *most* credible information channel, in this way satisfying the conditions for the categories to be independent. Two types of inferential analysis were applied:

- A decision tree is used to identify the profiles of pupils most likely to choose particular information channels in various contexts.
- Chi-squared analysis is applied to determine if there is a significant association between the pupils' choice of most credible information channel and one of the components of the credibility model.

This analysis is done by means of the statistical program SAS JMP version 12 and only statistically significant results are included in the text.

It is important to note here that as a result of the large sample size, statistically significant results occur more readily than with smaller samples even though the patterns might not be particularly large.

5.4.1.1 Scenario 1 – Information on buying a cell phone for personal use

Finding information about buying a cell phone was categorised as typical of a self-generated, commercial information need. (The reasoning for categorising such tasks as self-generated was explained in Section 4.4.4.2.) Because not all pupils recorded all the

requested information for this scenario, the N values for these questions vary. Table 5.10 shows the variations in the N values for responses for all the scenarios.

Table 5.11 shows the responses of various groupings of the participants to the question on previous experience with finding information on buying a cell phone.

N=410	School A	School B	School C	Boys	Girls	17/18 year-olds	13/14 year-olds	Total
Number with experience	12	266	38	125	191	154	114	316
Percentage with experience	75%	78%	73%	75%	78%	85%	70%	77%
Number responding	16	342	52	166	244	182	164	410

Table 5.11 Previous experience for Scenario 1 – buying a cell phone

The majority of the pupils (316/410, 77%) reported having had experience in looking for information in connection with buying a cell phone. The most noteworthy difference among the sub-groupings is that of the 17/18-year-olds; 85% (154/182) recorded having had experience compared to 70% (114/164) of the 13/14-year-olds.

Pupils' rating of the risk of using incorrect information when buying a cell phone is shown in Table 5.12.

Risk perception (N=352)	Number of pupils	Percentage
Low	66	19%
Medium	99	28%
Serious	187	53%
Total	352	100%

Table 5.12 Perception of risk in using incorrect information for Scenario 1 – buying a cell phone

The data indicates that the biggest group of pupils (187/352, 53%) perceive a serious risk associated with using incorrect information while researching buying a cell phone. In order to get a quantitative measure of this perception, low risk perception was given a value of 1, medium a value of 2 and serious a value of 3. Finding a weighted mean of all

the risk perceptions gives a perceived risk value of 2.34 for getting incorrect information about buying a cell phone.[10]

Pupils' ranking of the top five information channels they consider most credible of the listed 10 information channels is shown in Table 5.13. The mean rank for each information channel was also calculated[11]. This can be used to compare perceptions. This mean rank is shown in the last row of the table and is used as the basis on which to sort the information channels from the one perceived to be the most credible for information relevant to buying a cell phone on the left to the one perceived to be the least credible on the right. The **bottom row is rankings** so the lower the number, the more credible the information channel is perceived to be.

N=404 Ranking	Internet	Television	Magazines	Friends	Brochures	Family	Newspapers	Experts	Books	Teachers
1	137	63	33	35	50	18	12	38	11	1
2	63	76	57	28	41	30	31	16	15	5
3	40	71	71	42	25	38	28	20	15	6
4	41	50	51	68	22	35	42	15	19	11
5	36	35	47	68	22	61	28	38	17	12
Number in top 5	317	295	259	241	160	182	141	127	77	35
Number not in top 5	87	109	145	163	244	222	263	277	327	369
Mean rank	3.52	4.15	4.85	5.28	5.83	5.97	6.36	6.43	7.09	7.64

Table 5.13 Perceptions of information channel credibility for Scenario 1 – buying a cell phone

The mean rank reflects pupils' perceptions of the particular information channel's credibility. From Table 5.13 it is evident that fewer pupils perceive teachers, books or experts to be credible information channels when buying a cell phone. On the other hand, more pupils perceive the internet, television and magazines to be credible information channels for buying a cell phone.

Pupils' reasons for their choice of the most credible information channel when finding information on buying a cell phone are shown in Table 5.14. They were only required to

[10] (66x1 + 99x2 + 187x3)/352 = 2,34

[11] It should be noted that an unranked entry cannot be omitted, as this would skew the data, so since an unranked information channel could have been a 6, 7, 8, 9 or 10, all information channels not ranked in the top five are allocated the mean of these possible rankings (6+7+8+9+10)/5=8. This decision is based on the advice of a qualified statistician.

give a reason for their choice of the most credible information channel**.** The four reasons are sorted from most to least popular for ease of analysis. The 23 alternative open-ended options given by pupils are not included in these figures, but will be discussed thematically in Section 5.8.1.

N=398 Reason for choosing an information channel as most credible	Total for each reason
Trust because of past experience	131 (33%)
Trust information from this channel	96 (24%)
Channel has information you want	65 (16%)
Trust the person (who supplied/created the information)	49 (12%)
No reason given	57 (14%)

Table 5.14 Reasons for choice of most credible information channel in Scenario 1 – buying a cell phone

The predominant reason indicated by pupils for trusting a particular information channel when finding information about buying a cell phone was past experience (131/398, 33%) and the reason given least often was trust of a person (49/398,12%).

A decision tree was used to determine the profile of pupils choosing the internet as the most credible channel for information for this scenario and this is illustrated in Figure 5.4. This process is explained fully in Appendix J. In this diagram CO Internet represents the choice (or not) of the internet for commercial information needs and the pupils' weekly internet hours are grouped for less than 2 hours and more than or equal to 2 hours.

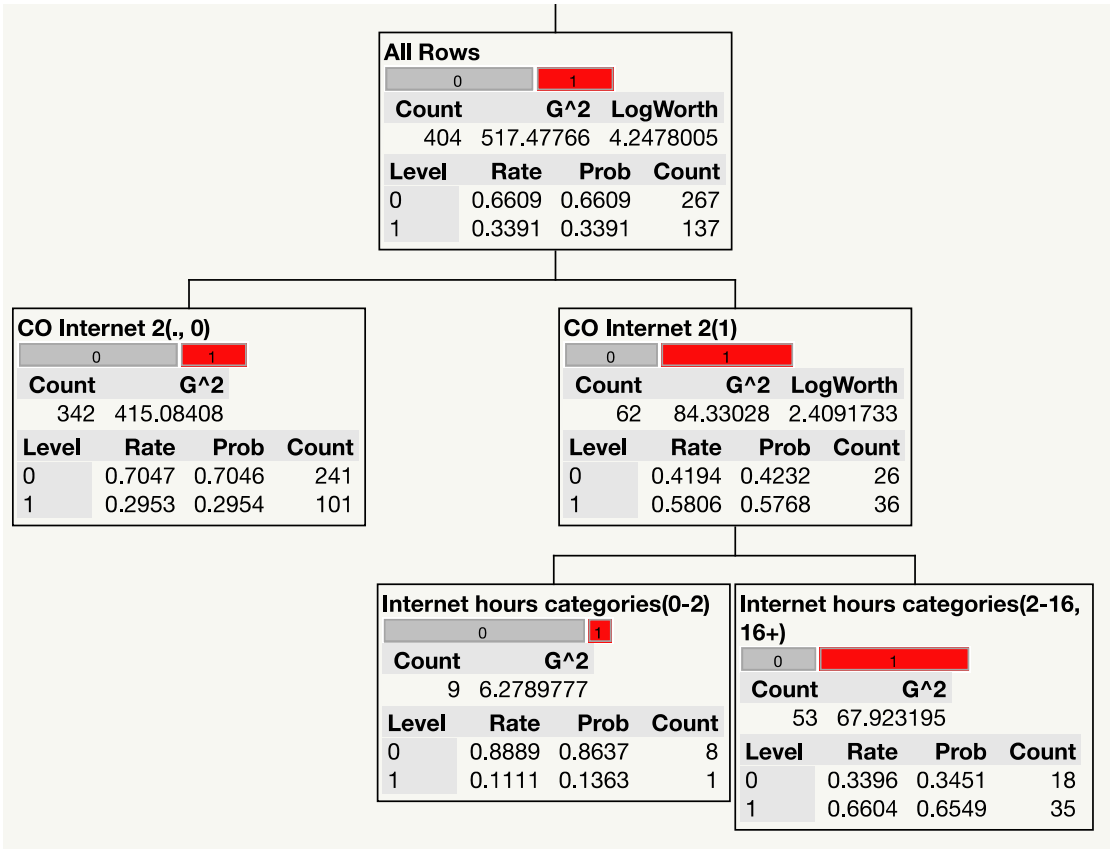


Figure 5.4 Decision tree with an initial state of pupils choosing the internet as the most credible channel for Scenario 1 – buying a cell phone

From the tree the following groups of profiles can be recognised:

The profile of a pupil with the greatest likelihood to perceive the internet as the most credible information channel for Scenario 1 (a self-generated task seeking commercial information) is a pupil whose first choice for the other commercial information need (Scenario 6) is also the internet **and** whose weekly internet usage is more than 2 hours. The rate is 66.04% (35/53)[12] compared to the overall rate of 33.91% without narrowing the field. The R^2 value indicates that only 5.44% of the variance is accounted for by the model, which is not a particularly good fit. The misclassification rate is 29.70% (120/404).

The chi-squared test was applied to determine whether there was an association between the choice of the internet as the most credible information channel for research on buying a cell phone and the pupils' perception of the risk associated with acting on incorrect information. Table 5.15 shows the contingency table for the proportions of these variables. (An explanation of the figures contained in the contingency tables, how they were calculated and how to interpret the results is given in Appendix K. It is

[12] When percentages are used for the calculation of statistics to be used for determination of statistical significance, the appropriate decimal places are shown.

important to note that the number of participants in this empirical survey is large and there is thus an increased tendency to get significant results from this test. Results must therefore be cross-referenced to make logical sense.)

N=319		Internet chosen	Internet **not** chosen	Total
Risk low (1)	Count Total % Col % Row %	14 4.39 11.97 23.73	45 14.11 22.28 76.27	59 18.5 0
Risk medium (2)	Count Total % Col % Row %	32 10.03 27.35 35.56	58 18.18 28.71 64.44	90 28.2 1
Risk serious (3)	Count Total % Col % Row %	71 22.26 60.68 41.76	99 31.03 49.01 58.24	170 53.2 9
Total	Count Total %	117 36.68	202 63.32	319

Table 5.15 Contingency table for choice of the internet and risk perception for Scenario 1 – buying a cell phone

To determine if the association is statistically significant, the Pearson chi-squared test was conducted. Null hypothesis: No statistically significant association exists between the choice of the internet and risk perception. Alternative hypothesis: A statistically significant association exists between the choice of the internet and risk perception. If the p-value is smaller than 0.05 the null hypothesis is rejected as in this case. The results revealed that there was a significant association between the two variables (chi-squared value = 6.202, df =2, p=0.0450). A copy of the table is included here with specific numbers highlighted to illustrate the association. Of the pupils choosing the internet for cell phone information, 11.97% perceived the risk to be low and 60.68% perceived the risk to be high, while the overall proportion for low and high risk is 18.50% and 53.29%, indicating a higher than expected proportion of pupils choosing the internet when they perceive the risk to be high. Thus it is statistically significant that pupils' risk perception and their choice of the internet are dependent. If the risk is low 23.73% (14/59) choose the internet if the risk is high 41.76%

N=319		Internet chosen	Internet **not** chosen	Total
Risk low (1)	Count **Total %** **Col %** Row %	14 4.39 **11.97** 23.73	45 14.11 22.28 76.27	59 **18.50**
Risk medium (2)	Count Total % Col % Row %	32 10.03 27.35 35.56	58 18.18 28.71 64.44	90 28.21
Risk serious (3)	Count **Total %** **Col %** Row %	71 22.26 **60.68** 41.76	99 31.03 49.01 58.24	170 **53.29**
Total	Count Total %	117 36.68	202 63.32	319

(71/170) choose the internet. The data indicates that the greater the risk perception, the greater the tendency to see the internet as the most credible information channel.

5.4.1.2 Scenario 2 – Finding information on AIDS for a school project

Finding information about AIDS for a school project was categorised as typical of an imposed, reference information need. Because not all pupils recorded all the requested information, the N values for these questions vary. Table 5.10 shows the variations in the N values for responses for all the scenarios.

Table 5.16 shows the responses of the participants to the question on previous experience with finding information on AIDS.

N=394	School A	School B	School C	Boys	Girls	17/18-year-olds	13/14-year-olds	Total
Number with experience	9	315	37	138	223	161	146	361
Percentage with experience	56%	94%	88%	86%	96%	91%	92%	92%
Number responding	16	336	42	161	233	177	159	394

Table 5.16 Previous experience for Scenario 2 – information on AIDS

The majority of the pupils (361/394, 92%) reported having had experience in looking for information in connection with AIDS. Pupils from school A are substantially less experienced (9/16, 56%) at finding information about AIDS than those from the other two schools. Also noteworthy is the number of boys indicating that they did not have experience (138/161, 86%) of finding AIDS information compared to girls (223/233, 96%). At the time of designing the data collection instrument it was decided not to ask if experience was of looking for information on AIDS for real-life situations or for school assignments, since this would have ethical implications.

Pupils' rating of the risk of using incorrect information when finding information on AIDS for a school project is shown in Table 5.17.

Risk perception (N=351)	Number of pupils	Percentage
Low	35	10%
Medium	66	19%
Serious	250	71%
Total	351	100%

Table 5.17 Perception of risk in using incorrect information for Scenario 2 – information on AIDS for a school project

The data indicates that the biggest group of pupils (250/351, 71%) perceive a serious risk associated with using incorrect information while researching AIDS for a school project. In order to get a quantitative measure of this perception, low risk perception was given a value of 1, medium a value of 2 and serious a value of 3. Finding a weighted mean of all the risk perceptions gives a perceived risk value of 2.61 for getting incorrect information when researching AIDS for a school project.[13]

Pupils' ranking of the top five information channels they consider most credible of the listed 10 information channels is shown in Table 5.18. The mean rank for each information channel was also calculated[14]. This can be used to compare perceptions. This mean rank is shown in the last row of the table and is used as the basis on which to sort the information channels from the one perceived to be the most credible for information on AIDS for a school project on the left to the one perceived to be the least credible on the right. The **bottom row is rankings,** so the lower the number, the more credible the information channel is perceived to be.

[13] (35x1 + 66x2 + 250x3)/351 = 2,61

14 An unranked entry cannot be omitted, as this would skew the data, so since an unranked information channel could have been a 6, 7, 8, 9 or 10, all information channels not ranked in the top five are allocated the mean of these possible rankings (6+7+8+9+10)/5=8. This decision is based on the advice of a qualified statistician.

N=409 Ranking	Internet	Teachers	Books	Television	Magazines	Family	Newspapers	Experts	Brochures	Friends
1	251	42	20	12	5	18	11	34	8	4
2	44	62	93	33	27	32	34	27	12	3
3	19	48	50	51	48	42	42	30	25	10
4	24	53	35	57	55	28	40	21	16	31
5	34	39	38	47	38	40	34	29	30	34
Number in top 5	372	244	236	200	173	160	161	141	91	82
Number not in top 5	37	165	173	209	236	249	248	268	318	327
Mean rank	2.34	4.98	5.06	5.78	6.11	6.14	6.16	6.24	7.00	7.21

Table 5.18 Perceptions of information channel credibility for Scenario 2 – information on AIDS for a school project

The mean rank reflects pupils' perceptions of the particular information channel's credibility. From Table 5.18 it is evident that fewer pupils perceive friends, brochures or experts to be credible information channels when researching AIDS for a school project. On the other hand, more pupils perceive the internet, teachers and books to be credible information channels when researching AIDS for a school project.

Pupils' reasons for their choice of the most credible information channel for finding information on AIDS for a school project are shown in Table 5.19. They were only required to give a reason for their choice of the most credible information channel**.** The four reasons are sorted from most to least popular for ease of analysis. The 18 alternative open-ended options given by pupils are not included in these figures, but will be discussed thematically in Section 5.8.1.

N=405 Reason for choosing an information channel as most credible	Total for each reason
Trust information from this channel	128 (32%)
Trust because of past experience	90 (22%)
Channel has information you want	66 (16%)
Trust the person (who supplied/created the information)	57 (14%)
No reason given	64 (16%)

Table 5.19 Reasons for choice of most credible information channel in Scenario 2 – information on AIDS for a school project

The predominant reason indicated by pupils for trusting a particular information channel when finding information about AIDS for a school project was that they trusted information from this channel (128/405, 32%) and the reason given least often was trust of a person (57/405,14%).

A decision tree was used to determine the profile of pupils choosing the internet as the most credible channel for information for this scenario and this is illustrated in Figure 5.5. This process is explained fully in Appendix J. In this diagram the pupils' weekly internet hours are grouped for less than 8 hours and more than or equal to 8 hours and experience refers to whether the pupil has experienced this particular information need in the past or not.

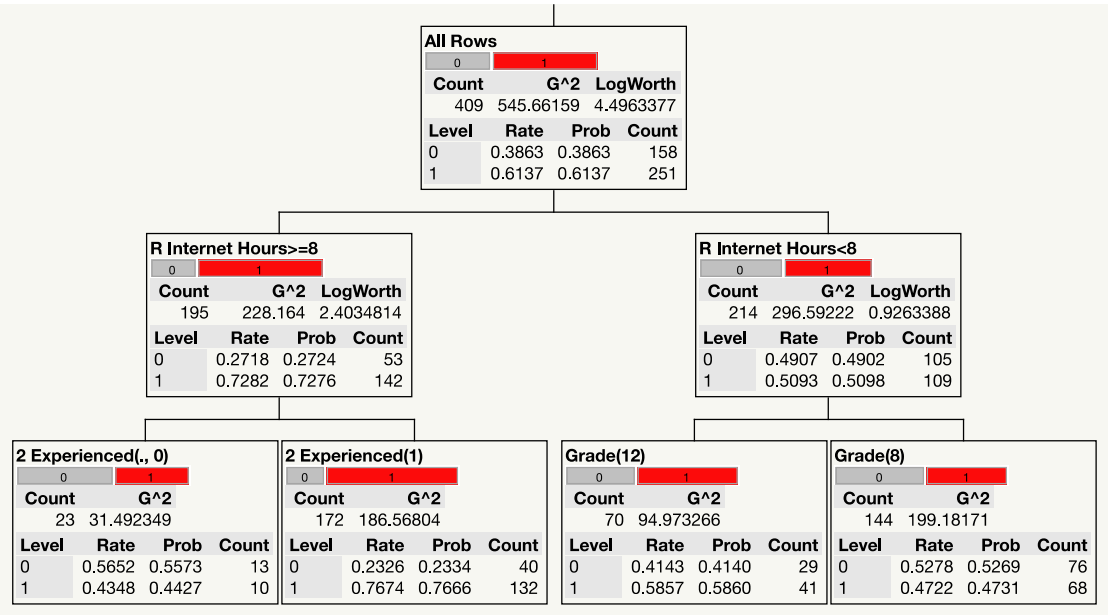


Figure 5.5 Decision tree with an initial state of pupils choosing the internet as the most credible channel for Scenario 2 – researching AIDS for a school project

From the tree the following groups of profiles can be recognised:

The profile of a pupil with the greatest likelihood to perceive the internet as the most credible information channel for Scenario 2 (an imposed task seeking reference information) is a pupil whose weekly internet usage is more than or equal to 8 hours and who has experienced this information need in the past. The rate is 76.74% (132/172) compared to the overall rate of 61.37% before the field has been narrowed.

The profile of a pupil with the greatest likelihood NOT to perceive the internet as the most credible information channel for Scenario 2 (an imposed task seeking reference information) is a grade 8 pupil whose weekly internet usage is less than 8 hours. The rate is 52.78% (76/144) compared to the overall rate of 38.63%.

The R^2 value indicates that only 6.13% of the variance is accounted for by the model, which is not a particularly good fit. The misclassification rate is 35.94% (147/409).

The chi-squared test was applied to determine whether there was an association between the choice of the internet as the most credible information channel for research on AIDS for a school project and the pupils' grades. Table 5.20 shows the contingency table for the proportions of these variables. (An explanation of the figures contained in the contingency tables, how they were calculated and how to interpret the results is given in Appendix K.)

		Internet chosen for Scenario 2	Internet **not** chosen for Scenario 2	Total
Grade 8	Count Total % Col % Row %	123 30.07 49.00 55.41	99 24.21 62.66 44.59	222 54.28
Grade 12	Count Total % Col % Row %	128 31.30 51.00 68.45	59 14.43 37.34 31.55	187 45.72
Total	Count Total %	251 61.37	158 38.63	409

Table 5.20 Contingency table for choice of the internet for Scenario 2 – researching AIDS for a school project and pupil's grade

To determine if the association is statistically significant, the Pearson chi-squared test was conducted. Null hypothesis: No statistically significant association exists between the choice of the internet and the pupil's grade. Alternative hypothesis: A statistically significant association exists between the choice of the internet and the pupil's grade. If the p-value is smaller than 0.05 the null hypothesis is rejected as in this case. The results revealed that there was a significant association between the two variables (chi-squared value = 7.284, df =2, p=0.0070). A copy of the table is included here with specific numbers highlighted to illustrate the association. Of the pupils who chose the internet for AIDS information, the ratio of grade 8s to grade 12s was 49% to 51%, while the overall ratio of grade 8s to grade 12s was 54.28% to 45.72% indicating a higher than expected proportion of grade 12s choosing the internet. Thus it is statistically significant that pupils' choice of the internet for this information need and their grade are dependent. Of the grade 8s, 55.41% (123/222) chose the internet while 68.45% (128/187) of the grade 12s chose the internet. The data indicates that a grade 12 pupil is more likely to choose the internet than a grade 8 pupil for AIDS information.

		Internet chosen for Scenario 2	Internet **not** chosen for Scenario 2	Total
Grade 8	Count **Total %** **Col %** Row %	123 30.07 **49.00** 55.41	99 24.21 62.66 44.59	222 **54.28**
Grade 12	Count **Total %** **Col %** Row %	128 31.30 **51.00** 68.45	59 14.43 37.34 31.55	187 **45.72**
Total	Count Total %	251 61.37	158 38.63	409

5.4.1.3 Scenario 3 – Information on policies of municipal political party

Finding information about local municipal political parties was categorised as typical of a self-generated, current affairs information need. (The reasoning for this was explained in the introduction to Section 5.4.1.) Because not all pupils recorded all the requested

information, the N values for these questions vary. Table 5.10 shows the variations in the N values for responses for all the scenarios.

Table 5.21 shows the responses of the participants to the question on previous experience with finding information on municipal political parties' policies.

N=390	School A	School B	School C	Boys	Girls	17/18-year-olds	13/14-year-olds	Total
Number with experience	9	107	27	59	84	47	66	143
Percentage with experience	56%	32%	68%	37%	36%	27%	42%	37%
Number responding	16	334	40	158	232	175	157	390

Table 5.21 Previous experience for Scenario 3 – municipal political party policies

The majority of the pupils (247/390, 63%) reported not having had experience in looking for information in connection with municipal political parties' policies. Participants from School B reported much less experience (107/334, 32%) than the other two schools. Also noteworthy is how much less the 17/18-year-old pupils' experience of researching municipal political information is (47/175, 27%), than that of the 13/14-year-olds (66/157, 42%).

Pupils' rating of the risk of using incorrect information when researching municipal political party policies is shown in Table 5.22.

Risk perception (N=278)	Number of pupils	Percentage
Low	109	39%
Medium	68	25%
Serious	101	36%
Total	278	100%

Table 5.22 Perception of risk in using incorrect information for Scenario 3 – municipal political party policies

The data indicates that pupils are divided about the risk of getting incorrect information while researching municipal political parties' policies. The majority either think it is a serious risk or a low risk, with little support in between. In order to get a quantitative

measure of this perception, a low risk perception was given a value of 1, medium a value of 2 and serious a value of 3. Finding a weighted mean of all the risk perceptions gives a perceived risk value of 1.97 for incorrect information when researching municipal political parties' policies.[15] A number of pupils actually went so far as to write a little note next to this question expressing their disinterest in politics: "I don't really care", "For some reason I don't really care about politics", "I do not really follow (elections and politics)."

Pupils' ranking of the top five information channels they consider most credible of the listed 10 information channels is shown in Table 5.23. The mean rank for each information channel was also calculated[16]. This can be used to compare perceptions. This mean rank is shown in the last row of the table and is used as the basis on which to sort the information channels from the one perceived to be most credible for information relevant to municipal political party policies on the left to the one perceived to be least credible on the right. The **bottom row is rankings,** so the lower the number, the more credible the information channel is perceived to be.

N=335 Ranking	Internet	Television	Newspapers	Family	Teachers	Magazines	Experts	Books	Friends	Brochures
1	86	83	58	39	20	6	18	7	7	5
2	40	45	69	31	20	20	20	17	16	7
3	44	33	39	33	27	35	30	17	13	10
4	37	40	33	35	28	36	15	31	14	10
5	33	31	32	38	32	28	21	25	32	18
Number in top 5	240	232	231	176	127	125	104	97	82	50
Number not in top 5	95	103	104	159	208	210	231	238	253	285
Mean rank	4.09	4.21	4.29	5.38	6.20	6.31	6.45	6.70	6.92	7.34

Table 5.23 Perceptions of information channel credibility for Scenario 3 – municipal political party policies

The mean rank reflects pupils' perceptions of the particular information channel's credibility. From Table 5.23 it is evident that fewer pupils perceive brochures, friends or books to be credible information channels when researching municipal political party

[15] (109x1 + 68x2 + 101x3)/278 = 2,34

[16] An unranked entry cannot be omitted, as this would skew the data, so since an unranked information channel could have been a 6, 7, 8, 9 or 10, all information channels not ranked in the top five are allocated the mean of these possible rankings (6+7+8+9+10)/5=8. This decision is based on the advice of a qualified statistician.

policies. On the other hand, more pupils perceive the internet, television and newspapers to be credible information channels when researching municipal political party policies.

Pupils' reasons for their choice of the most credible information channel for finding information on municipal party policies are shown in Table 5.24. They were only required to give a reason for their choice of the most credible information channel**.** The four reasons are sorted from most to least popular for ease of analysis. The 16 alternative open-ended options given by pupils are not included in these figures, but will be discussed thematically in Section 5.8.1.

N=329 Reason for choosing an information channel as most credible	Total for each reason
Trust information from this channel	107 (33%)
Channel has information you want	69 (21%)
Trust the person (who supplied/created the information)	58 (18%)
Trust because of past experience	31 (9%)
No reason given	64 (19%)

Table 5.24 Reasons for choice of most credible channel in Scenario 3 – municipal political party policies

The predominant reason indicated by pupils for trusting a particular information channel when finding information about municipal party policies was that they trusted the information from this channel (107/329, 33%) and the reason given least often was trust because of past experience (31/329,9%).

A decision tree was used to determine the profile of pupils choosing the internet as the most credible channel for information for this scenario and this is illustrated in Figure 5.6. This process is explained fully in Appendix J. In this diagram Experienced represents pupils who have previously experienced this information need and the pupils' weekly internet hours are grouped for less than 15 hours and more than or equal to 15 hours.

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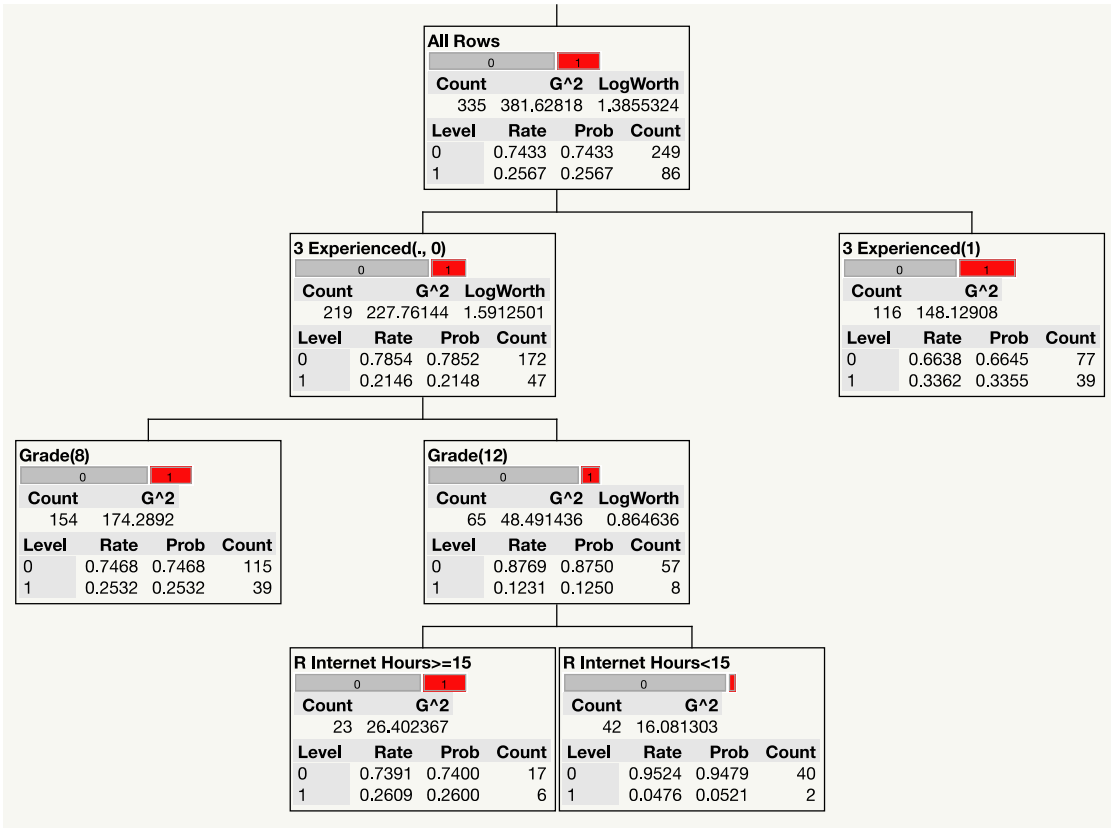

Figure 5.6 Decision tree with an initial state of pupils choosing the internet as the most credible channel for Scenario 3 – researching municipal party policies

From the tree the following groups of profiles can be recognised:

The profile of a pupil with the greatest likelihood to perceive the internet as the most credible information channel for Scenario 3 (a self-generated task seeking current affairs information) is a pupil who has had experience of researching municipal party policies in the past. The rate is 33.62% (39/116) compared to the overall rate of 25.67%.

The profile of a pupil with the greatest likelihood NOT to perceive the internet as the most credible information channel for Scenario 3 (a self-generated task seeking current affairs information) is a pupil who has not experienced researching municipal party policies in the past, is in grade 12 and whose weekly internet usage is less than 15 hours. The rate is 95.24% (40/42) compared to the overall rate of 74.33%.

The R^2 value indicates that only 4.38% of the variance is accounted for by the model, which is not a particularly good fit. The misclassification rate is 25.67% (86/335).

A decision tree was used to determine the profile of pupils choosing television as the most credible channel for information for this scenario.

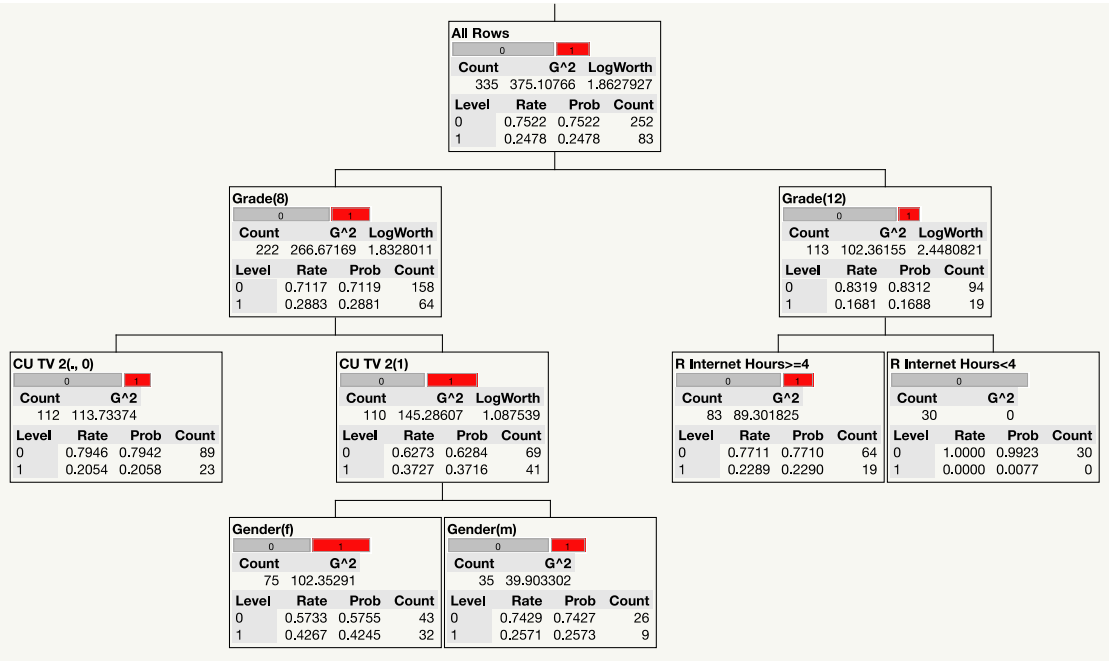

Figure 5.7 Decision tree with an initial state of pupils choosing television as the most credible channel for Scenario 3 – researching municipal party policies

From the tree the following groups of profiles can be recognised:

The profile of a pupil with the greatest likelihood to perceive television as the most credible information channel for Scenario 3 (a self-generated task seeking current affairs information) is a female pupil in grade 8 who also chooses television for the other current affairs information need. The rate is 42.67% (32/75) compared to the overall rate of 24.78%.

The profile of a pupil with the greatest likelihood NOT to perceive television as the most credible information channel for Scenario 3 (a self-generated task seeking current affairs information) is a grade 12 pupil whose weekly internet usage is less than 4 hours. The rate is 100% (30/30) compared to the overall rate of 75.22%.

The R^2 value indicates that only 7.26% of the variance is accounted for by the model, which is not a particularly good fit. The misclassification rate is 24.78% (83/335).

The chi-squared test was applied to determine whether there was an association between the choice of the internet as the most credible information channel for research on municipal party policies and the pupil's experience of this information need in the

past. Table 5.25 shows the contingency table for the proportions of these variables. (An explanation of the figures contained in the contingency tables, how they were calculated and how to interpret the results is given in Appendix K.)

N=256		Internet chosen for Scenario 3	Internet **not** chosen for Scenario 3	Total
Experienced	Count	39	77	116
	Total %	15.23	30.08	45.31
	Col %	56.52	41.18	
	Row %	33.62	66.38	
Not experienced	Count	30	110	140
	Total %	11.72	42.97	54.69
	Col %	43.48	58.82	
	Row %	21.43	78.57	
Total	Count	69	187	256
	Total %	26.95	73.05	

Table 5.25 Contingency table for choice of the internet and experience for Scenario 3 – researching municipal party policies

To determine if the association is statistically significant, the Pearson chi-squared test was conducted. Null hypothesis: No statistically significant association exists between the choice of the internet and experience. Alternative hypothesis: A statistically significant association exists between the choice of the internet and experience. If the p-value is smaller than 0.05 the null hypothesis is rejected as in this case. The results revealed that there was a significant association between the two variables (chi-squared value = 4.970, df =2, p=0.0286). A copy of the table is included here with specific numbers highlighted to illustrate the association. Of the pupils who chose the internet for municipal information, the ratio of pupils who had not previously experienced this need to pupils who had experienced it was 43.48% to 56.52%, while the overall ratio was 54.69% to 45.31%, indicating a higher than expected proportion of experienced pupils who chose the internet. Thus it is statistically significant that pupils' choice of the internet for this current affairs information need and their experience are dependent. If the pupils have previously experienced this need, 33.62% (39/116) choose the internet while if the pupils have not experienced this need, 21.43% (30/140) choose the internet. The data indicates that if pupils choose the internet as the most credible information channel for this scenario they have a greater tendency to have experienced this task before.

N=256		Internet chosen for Scenario 3	Internet **not** chosen for Scenario 3	Total
Experienced	Count	39	77	116
	Total %	15.23	30.08	**45.31**
	Col %	**56.52**	41.18	
	Row %	33.62	66.38	
Not experienced	Count	30	110	140
	Total %	11.72	42.97	**54.69**
	Col %	**43.48**	58.82	
	Row %	21.43	78.57	
Total	Count	69	187	256
	Total %	26.95	73.05	

The chi-squared test was applied to determine whether there was an association between the choice of the internet as the most credible information channel for research on municipal party policies and pupils' perception of the risk associated with acting on incorrect information. Table 5.26 shows the contingency table for the proportions of these variables. (An explanation of the figures contained in the contingency tables, how they were calculated and how to interpret the results is given in Appendix K.)

N=248		Internet chosen for Scenario 3	Internet **not** chosen for Scenario 3	Total
Risk low (1)	Count	17	82	99
	Total %	6.85	33.06	39.92
	Col %	26.98	44.32	
	Row %	17.17	82.83	
Risk medium (2)	Count	15	47	62
	Total %	6.05	18.95	25.00
	Col %	23.81	25.41	
	Row %	24.19	75.81	
Risk serious (3)	Count	31	56	87
	Total %	12.50	22.58	35.08
	Col %	49.21	30.27	
	Row %	35.63	64.37	
Total	Count	63	185	248
	Total %	25.40	74.60	

Table 5.26 Contingency table for choice of the internet and risk perception for Scenario 3 – municipal party policies

To determine if the association was statistically significant, the Pearson chi-squared test was conducted. Null hypothesis: No statistically significant association exists between the choice of the internet and risk perception. Alternative hypothesis: A statistically significant association exists between the choice of the internet and risk perception. If the p-value is smaller than 0.05 the null hypothesis is rejected as in this case. The results revealed that there was a significant association between the two variables (chi-squared value = 8.391, df =2, p=0.0151). A copy of the table is included here with specific numbers highlighted to illustrate the association. Of the pupils choosing the internet for municipal information, 26.98% perceived the risk to be low and 49.21% perceived the risk to be high, while the overall proportion for low and high risk is 39.92% and

N=248		Internet chosen for Scenario 3	Internet **not** chosen for Scenario 3	Total
Risk low (1)	Count	17	82	99
	Total %	6.85	33.06	**39.92**
	Col %	**26.98**	44.32	
	Row %	17.17	82.83	
Risk medium (2)	Count	15	47	62
	Total %	6.05	18.95	25.00
	Col %	23.81	25.41	
	Row %	24.19	75.81	
Risk serious (3)	Count	31	56	87
	Total %	12.50	22.58	**35.08**
	Col %	**49.21**	30.27	
	Row %	35.63	64.37	
Total	Count	63	185	248
	Total %	25.40	74.60	

35.08%, indicating a higher than expected proportion of pupils choosing the internet and perceiving the risk to be high. Thus it is statistically significant that pupils' risk perception and their choice of the internet are dependent. If the risk is low, 17.17% (17/99) choose the internet while if the risk is high 35.63% (31/87) choose the internet. The data indicates that the greater the risk perception, the greater the tendency to see the internet as the most credible information channel for municipal party information.

The chi-squared test was applied to determine whether there was an association between the choice of television as the most credible information channel for research on municipal party policies and the pupils' grade. Table 5.27 shows the contingency table for the proportions of these variables. (An explanation of the figures contained in the contingency tables, how they were calculated and how to interpret the results is given in Appendix K.)

N=335		Television chosen for Scenario 3	Television **not** chosen for Scenario 3	Total
Grade 8	Count	64	158	222
	Total %	19.10	47.16	66.27
	Col %	77.11	62.70	
	Row %	28.83	71.17	
Grade 12	Count	19	94	113
	Total %	5.67	28.06	33.73
	Col %	22.89	37.30	
	Row %	16.81	83.19	
Total	Count	83	252	335
	Total %	24.78	75.22	

Table 5.27 Contingency table for choice of television for Scenario 3 – researching municipal party policies and pupils' grades

To determine if the association was statistically significant, the Pearson chi-squared test was conducted. Null hypothesis: No statistically significant association exists between the choice of television and the pupil's grade. Alternative hypothesis: A statistically significant association exists between the choice of television and the pupil's grade. If the p-value is smaller than 0.05 the null hypothesis is rejected as in this case. The results revealed that there was a significant association between the two variables (chi-squared value = 5.800, df =2, p=0.0160). A copy of the table is included here with specific numbers highlighted to illustrate the association. Of the pupils who chose

N=335		Television chosen for Scenario 3	Television **not** chosen for Scenario 3	Total
Grade 8	Count	64	158	222
	Total %	19.10	47.16	**66.27**
	Col %	**77.11**	62.70	
	Row %	28.83	71.17	
Grade 12	Count	19	94	113
	Total %	5.67	28.06	**33.73**
	Col %	**22.89**	37.30	
	Row %	16.81	83.19	
Total	Count	83	252	335
	Total %	24.78	75.22	

television for municipal party information, the ratio of grade 8s to grade 12s was 77.11% to 22.89%, while the overall ratio of grade 8s to grade 12s was 66.27% to 33.73%, indicating a higher than expected proportion of grade 8s choosing television. Thus it is statistically significant that pupils' choice of television for municipal party information and their grades are dependent. Of the grade 8s, 28.83% (64/222) chose television while 16.81% (19/113) of the grade 12s chose television. The data indicates that a grade 8 pupil is more likely to choose television for political information than a grade 12 one.

5.4.1.4 Scenario 4 – Information on a movie for a school project

Finding background information on movies for a school project was categorised as typical of an imposed, leisure information need. Because not all pupils recorded all the requested information, the N values for these questions vary. Table 5.10 shows the variations in the N values for responses for all the scenarios.

Table 5.28 shows the responses of the participants to the question on previous experience with finding information on movies.

N=388	School A	School B	School C	Boys	Girls	17/18-year-olds	13/14-year-olds	Total
Number with experience	11	250	32	117	176	148	108	293
Percentage with experience	73%	76%	73%	74%	77%	84%	70%	76%
Number responding	15	331	42	158	230	177	155	388

Table 5.28 Previous experience for Scenario 4 – movie information

The majority of the pupils (293/388, 76%) reported having had experience in looking for information in connection with movies. Also noteworthy is the number of 17/18-year-old pupils (148/177, 84%) indicating that they did have experience researching movies compared to the 13/14-year-old group (108/155, 70%). Participants were not asked if their experience was with seeking information on movies for their own needs or for a school assignment.

Pupils' rating of the risk of using incorrect information when researching background information on a movie for a school project is shown in Table 5.29.

Risk perception (N=326)	Number of pupils	Percentage
Low	64	20%
Medium	79	24%
Serious	183	56%
Total	326	100%

Table 5.29 Perception of risk in using incorrect information for Scenario 4 – movie information for a school project

The data indicates that the biggest group of pupils (183/326, 56%) perceive a serious risk associated with using incorrect information while researching movies for a school project. In order to get a quantitative measure of this perception, low risk perception was given a value of 1, medium a value of 2 and serious a value of 3. Finding a weighted mean of all the risk perceptions gives a perceived risk value of 2.37 for incorrect information when researching movies for a school project.[17] Participants were not asked to rate their perceptions of risk for real-life movie information needs.

Pupils' ranking of the top five information channels they consider most credible of the listed 10 information channels is shown in Table 5.30. The mean rank for each information channel was also calculated[18]. This can be used to compare perceptions. This mean rank is shown in the last row of the table and is used as the basis on which to sort the information channels from the one perceived to be most credible for information relevant to movies for a school project on the left to the one perceived to be least credible on the right. The **bottom row is rankings,** so the lower the number, the more credible the information channel is perceived to be.

[17] (64x1 + 79x2 + 183x3)/326 = 2,37

[18] An unranked entry cannot be omitted, as this would skew the data, so since an unranked information channel could have been a 6, 7, 8, 9 or 10, all information channels not ranked in the top five are allocated the mean of these possible rankings (6+7+8+9+10)/5=8. This decision is based on the advice of a qualified statistician.

N=395 Ranking	Internet	Television	Books	Magazines	Friends	Teachers	Experts	Family	Newspapers	Brochures
1	210	76	42	11	5	29	6	6	3	2
2	72	76	78	36	35	21	7	10	12	7
3	29	58	39	71	32	29	21	26	19	19
4	14	33	33	60	64	23	30	26	31	10
5	16	31	29	38	56	28	50	30	29	22
Number in top 5	341	274	221	216	192	130	114	98	94	60
Number not in top 5	54	121	174	179	203	265	281	297	301	335
Mean rank	2.55	4.19	5.02	5.46	5.90	6.35	6.84	6.92	6.99	7.35

Table 5.30 Perceptions of information channel credibility for Scenario 4 – movie information for a school project

The mean rank reflects pupils' perceptions of the particular information channel's credibility. From Table 5.30 it is evident that fewer pupils perceive brochures, newspapers or family to be credible information channels when researching movies for a school project. On the other hand, more pupils perceive the internet, television and books to be credible information channels when researching movies for a school project.

Pupils' reasons for their choice of the most credible information channel for finding movie information for a school project are shown in Table 5.31. They were only required to give a reason for their choice of the most credible information channel**.** The four reasons are sorted from most to least popular for ease of analysis. The 13 alternative open-ended options given by pupils are not included in these figures, but will be discussed thematically in Section 5.8.1.

N=390 Reason for choosing an information channel as most credible	Total for each reason
Trust information from this channel	112 (29%)
Trust because of past experience	82 (21%)
Channel has information you want	69 (18%)
Trust the person (who supplied/created the information)	62 (16%)
No reason given	65 (17%)

Table 5.31 Reasons for choice of most credible channel in Scenario 4 – movie information for a school project

The predominant reason indicated by pupils for trusting a particular information channel when finding movie information for a school project was that they trusted information from this channel (112/390, 29%) and the reason given least often was trust of a person (62/390,16%).

A decision tree was used to determine the profile of pupils choosing the internet as the most credible channel for information for this scenario and this is illustrated in Figure 5.8. This process is explained fully in Appendix J. In this diagram the pupils' weekly internet hours are grouped for less than 15 hours and more than or equal to 15 hours. The pupils' risk perception is grouped as high risk perception (3) or low to medium risk perception (1 and 2). L Magazines represents the choice (or not) of magazines as the most credible information channel for the other leisure information need (Scenario 7 – entering a talent competition).

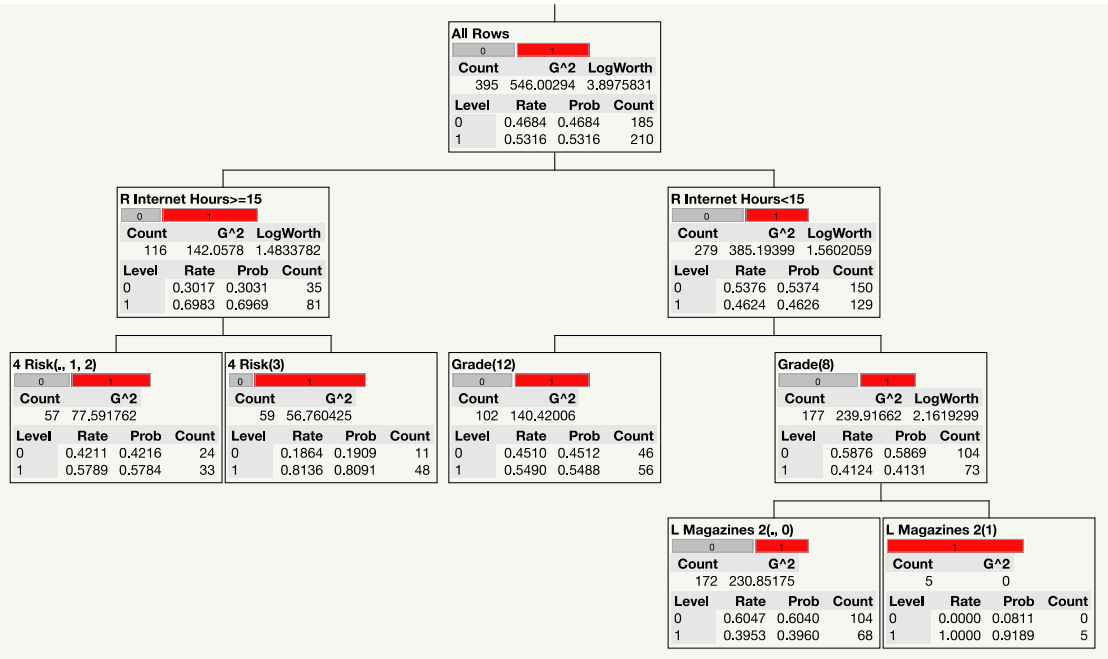

Figure 5.8 Decision tree with an initial state of pupils choosing the internet as the most credible channel for Scenario 4 – researching movies for a school project

From the tree the following groups of profiles can be recognised:

The profile of a pupil with the greatest likelihood to perceive the internet as the most credible information channel for Scenario 4 (an imposed task seeking leisure information) is a pupil whose weekly internet usage is 15 hours or more and who perceives the risk associated with getting incorrect information as serious (3). The rate is 81.36% (48/59), compared to the overall rate of 53.16%.

The profile of a pupil with the greatest likelihood NOT to perceive the internet as the most credible information channel for Scenario 4 (an imposed task seeking leisure information) is a grade 8 pupil whose weekly internet usage is less than 15 hours and who does not perceive magazines to be a credible channel for the other leisure information need. The rate is 60.47% (104/172), compared to the overall rate of 46.84%.

The R^2 value indicates that only 7.37% of the variance is accounted for by the model, which is not a particularly good fit. The misclassification rate is 38.99% (154/395).

The chi-squared test was applied to determine whether there was an association between the choice of the internet as the most credible information channel for research on movies for a school project and the pupils' grades. Table 5.32 shows the contingency table for the proportions of these variables. (An explanation of the figures contained in

the contingency tables, how they were calculated and how to interpret the results is given in Appendix K.)

N=395		Internet chosen for Scenario 4	Internet **not** chosen for Scenario 4	Total
Grade 8	Count	102	118	220
	Total %	25.82	29.87	55.70
	Col %	48.57	63.78	
	Row %	46.36	53.64	
Grade 12	Count	108	67	175
	Total %	27.34	16.96	44.30
	Col %	51.43	36.22	
	Row %	61.71	38.29	
Total	Count	210	185	395
	Total %	53.16	46.84	

Table 5.32 Contingency table for choice of the internet for Scenario 4 – researching movies for a school project and pupil's grade

To determine if the association is statistically significant, the Pearson chi-squared test was conducted. Null hypothesis: No statistically significant association exists between the choice of the internet and the pupil's grade. Alternative hypothesis: A statistically significant association exists between the choice of the internet and the pupil's grade. If the p-value is smaller than 0.05 the null hypothesis is rejected as in this case. The results revealed that there was a significant association between the two variables (chi-squared value = 9.224, df =2, p=0.0024). A copy of the table is included here with specific numbers highlighted to illustrate the association. Of the pupils who chose the internet for Scenario 4, the ratio of grade 8s to grade 12s was 48.57% to 51.43%, while the overall ratio of grade 8s to grade 12s was 55.70% to 44.30%, indicating a higher than expected proportion of grade 12s choosing the internet. Thus it is statistically significant that pupils' choice of the internet for this information need and their grades are dependent. Of the grade 8s, 46.36% (102/220) chose the internet while 61.71% (108/175) of the grade 12s chose the internet. The data indicates that a grade 12 pupil is more likely to choose the internet than a grade 8 for leisure information on movies.

N=395		Internet chosen for Scenario 4	Internet **not** chosen for Scenario 4	Total
Grade 8	Count	102	118	220
	Total %	25.82	29.87	**55.70**
	Col %	**48.57**	63.78	
	Row %	46.36	53.64	
Grade 12	Count	108	67	175
	Total %	27.34	16.96	**44.30**
	Col %	**51.43**	36.22	
	Row %	61.71	38.29	
Total	Count	210	185	395
	Total %	53.16	46.84	

The chi-squared test was applied to determine whether there was an association between the choice of the internet as the most credible information channel for research

on movies for a school project and pupils' experience of this information need in the past. Table 5.33 shows the contingency table for the proportions of these variables. (An explanation of the figures contained in the contingency tables, how they were calculated and how to interpret the results is given in Appendix K.)

N=320		Internet chosen for Scenario 4	Internet **not** chosen for Scenario 4	Total
Experienced	Count Total % Col % Row %	146 45.63 87.43 57.25	109 34.06 71.24 42.75	255 79.69
Not experienced	Count Total % Col % Row %	21 6.56 12.57 32.31	44 13.75 28.76 67.69	65 20.31
Total	Count Total %	167 52.19	153 47.81	320

Table 5.33 Contingency table for choice of the internet and experience for Scenario 4 – researching movies for a school project

To determine if the association is statistically significant, the Pearson chi-squared test was conducted. Null hypothesis: No statistically significant association exists between the choice of the internet and experience. Alternative hypothesis: A statistically significant association exists between the choice of the internet and experience. If the p-value is smaller than 0.05 the null hypothesis is rejected as in this case. The results revealed that there was a significant association between the two variables (chi-squared value = 12.919, df =2, p=0.0003). A copy of the table is included here with specific numbers highlighted to illustrate the association. Of the pupils who chose the internet for Scenario 4, the ratio of pupils who had not previously experienced this need to pupils who had experienced it was 12.57% to 87.43%, while the overall ratio was 20.31% to 79.69%, indicating a higher than expected proportion of experienced pupils who chose the internet. Thus it is statistically significant that pupils' choice of the internet for this reference information need and their experience are dependent. If the pupils have previously experienced this need, 57.25% (146/255) choose the internet while if the pupils have not experienced this need, 32.31% (21/65) choose the internet. The data indicates that if pupils choose the

N=320		Internet chosen for Scenario 4	Internet **not** chosen for Scenario 4	Total
Experienced	Count **Total %** **Col %** Row %	146 45.63 **87.43** 57.25	109 34.06 71.24 42.75	255 **79.69**
Not experienced	Count **Total %** **Col %** Row %	21 6.56 **12.57** 32.31	44 13.75 28.76 67.69	65 **20.31**
Total	Count Total %	167 52.19	153 47.81	320

internet as the most credible information channel for this scenario, they have a greater tendency to have experienced this task before.

The chi-squared test was applied to determine whether there was an association between the choice of the internet as the most credible information channel for research on movies for a school project and pupils' perception of the risk associated with acting on incorrect information. Table 5.34 shows the contingency table for the proportions of these variables. (An explanation of the figures contained in the contingency tables, how they were calculated and how to interpret the results is given in Appendix K.)

N=304		Internet chosen for Scenario 4	Internet **not** chosen for Scenario 4	Total
Risk low (1)	Count Total % Col % Row %	21 6.91 12.80 34.43	40 13.16 28.57 65.57	61 20.07
Risk medium (2)	Count Total % Col % Row %	39 12.83 23.78 50.65	38 12.50 27.14 49.35	77 25.33
Risk serious (3)	Count Total % Col % Row %	104 34.21 63.41 62.65	62 20.39 44.29 37.35	166 54.61
Total	Count Total %	164 53.95	140 46.05	304

Table 5.34 Contingency table for choice of the internet and risk perception for Scenario 4 – researching movies for a school project

To determine if the association is statistically significant, the Pearson chi-squared test was conducted. Null hypothesis: No statistically significant association exists between the choice of the internet and risk perception. Alternative hypothesis: A statistically significant association exists between the choice of the internet and risk perception. If the p-value is smaller than 0.05 the null hypothesis is rejected as in this case. The results revealed that there was a significant association between the two variables (chi-squared value = 14.755, df =2, p=0.0006). A copy of the table is included here with specific numbers highlighted to illustrate the association.

N=304		Internet chosen for Scenario 4	Internet **not** chosen for Scenario 4	Total
Risk low (1)	Count **Total %** **Col %** Row %	21 6.91 **12.80** 34.43	40 13.16 28.57 65.57	61 **20.07**
Risk medium (2)	Count Total % Col % Row %	39 12.83 23.78 50.65	38 12.50 27.14 49.35	77 25.33
Risk serious (3)	Count **Total %** **Col %** Row %	104 34.21 **63.41** 62.65	62 20.39 44.29 37.35	166 **54.61**
Total	Count Total %	164 53.95	140 46.05	304

Of the pupils choosing the internet for this scenario, 12.80% perceived the risk to be low and 63.41% perceived the risk to be high, while the overall proportion for low and high risk was 20.07% and 54.61%, indicating a higher than expected proportion for pupils choosing the internet and perceiving the risk to be high. Thus it is statistically significant that pupils' risk perception and their choice of the internet are dependent. If the risk is low, 34.43% (21/61) choose the internet while if the risk is high 62.65% (104/166) choose the internet. The data indicates that the greater the risk perception, the greater the tendency to see the internet as the most credible information channel.

5.4.1.5 Scenario 5 – Information on tuberculosis in case a friend has it

Finding information about tuberculosis was categorised as typical of a self-generated, reference information need. (The reasoning for this was explained in the introduction to Section 5.4.1.) Because not all pupils recorded all the requested information, the N values for these questions vary. Table 5.10 shows the variations in the N values for responses for all the scenarios.

Table 5.35 shows the responses of the participants to the question on previous experience with finding information on tuberculosis.

N=392	School A	School B	School C	Boys	Girls	17/18-year-olds	13/14-year-olds	Total
Number with experience	7	207	28	85	157	97	103	242
Percentage with experience	44%	62%	67%	54%	67%	56%	66%	62%
Number responding	16	334	42	158	234	178	157	392

Table 5.35 Previous experience for Scenario 5 – tuberculosis

The majority of the pupils (242/392, 62%) reported having had experience of looking for information in connection with tuberculosis. Pupils from school A (the high-fee-paying school) reported substantially less experience (7/16, 44%) of finding information about tuberculosis than pupils from the other schools. Boys (85/158, 54%) reported less experience of finding information on tuberculosis than girls (157/234, 67%). The 13/14-year-old pupils (103/157, 66%) reported more experience of finding information about tuberculosis than the 17/18-year-old pupils (97/178, 56%).

Pupils' rating of the risk of using incorrect information when researching tuberculosis is shown in Table 5.36.

Risk perception (N=291)	Number of pupils	Percentage
Low	30	10%
Medium	42	15%
Serious	219	75%
Total	291	100%

Table 5.36 Perception of risk in using incorrect information for Scenario 5 – tuberculosis

The data indicates that the biggest group of pupils (219/291, 75%) perceived a serious risk associated with using incorrect information while researching tuberculosis. In order to get a quantitative measure of this perception, low risk perception was given a value of 1, medium a value of 2 and serious a value of 3. Finding a weighted mean of all the risk perceptions gives a perceived risk value of 2.65 for incorrect information when researching tuberculosis.[19]

Pupils' ranking of the top five information channels they consider most credible of the listed 10 information channels is shown in Table 5.37. The mean rank for each information channel was also calculated[20]. This can be used to compare perceptions. This mean rank is shown in the last row of the table and is used as the basis on which to sort the information channels from the one perceived to be most credible for information relevant to tuberculosis on the left to the one perceived to be least credible on the right. The **bottom row is rankings,** so the lower the number, the more credible the information channel is perceived to be.

[19] (30x1 + 42x2 + 219x3)/291 = 2,65

[20] An unranked entry cannot be omitted, as this would skew the data, so since an unranked information channel could have been a 6, 7, 8, 9 or 10, all information channels not ranked in the top five are allocated the mean of these possible rankings (6+7+8+9+10)/5=8. This decision is based on the advice of a qualified statistician.

N=350 Ranking	Internet	Teachers	Television	Books	Family	Experts	Newspapers	Magazines	Brochures	Friends
1	192	31	17	20	22	38	6	3	6	9
2	36	61	42	48	31	25	18	30	13	6
3	22	44	53	25	46	16	30	28	22	17
4	33	35	46	33	28	19	36	36	16	16
5	23	29	48	38	17	37	43	27	17	27
Number in top 5	306	200	206	164	144	135	133	124	74	75
Number not in top 5	44	150	144	186	206	215	217	226	276	275
Mean rank	2.65	5.06	5.25	5.72	5.91	6.05	6.36	6.38	7.01	7.06

Table 5.37 Perceptions of information channel credibility for Scenario 5 – tuberculosis

The mean rank reflects pupils' perceptions of the particular information channel's credibility. From Table 5.37 it is evident that fewer pupils perceive friends, brochures or magazines to be credible information channels when researching tuberculosis. On the other hand, more pupils perceive the internet, teachers and television to be credible information channels when researching tuberculosis.

Pupils' reasons for their choice of the most credible information channel for finding information on tuberculosis are shown in Table 5.38. They were only required to give a reason for their choice of most credible information channel**.** The four reasons are sorted from most to least popular for ease of analysis. The 12 alternative open-ended options given by pupils are not included in these figures, but will be discussed thematically in Section 5.8.1.

N=344 Reason for choosing an information channel as most credible	Total for each reason
Trust information from this channel	95 (28%)
Trust because of past experience	73 (21%)
Trust the person (who supplied/created the information)	65 (19%)
Channel has information you want	51 (15%)
No reason given	60 (17%)

Table 5.38 Reasons for choice of most credible channel in Scenario 5 – tuberculosis

The predominant reason indicated by pupils for trusting a particular information channel when finding information about tuberculosis was that they trusted information from this channel (95/344, 28%) and the reason given least often was that the channel had the information they wanted (51/344,15%).

A decision tree was used to determine the profile of pupils choosing the internet as the most credible channel for information for this scenario and this is illustrated in Figure 5.9. This process is explained fully in Appendix J. In this diagram R Internet represents the choice (or not) of the internet for reference information needs, R TV represents the choice (or not) of television for reference information and the pupils' risk perception is grouped as high risk perception (3) or low to medium risk perception (1 and 2).

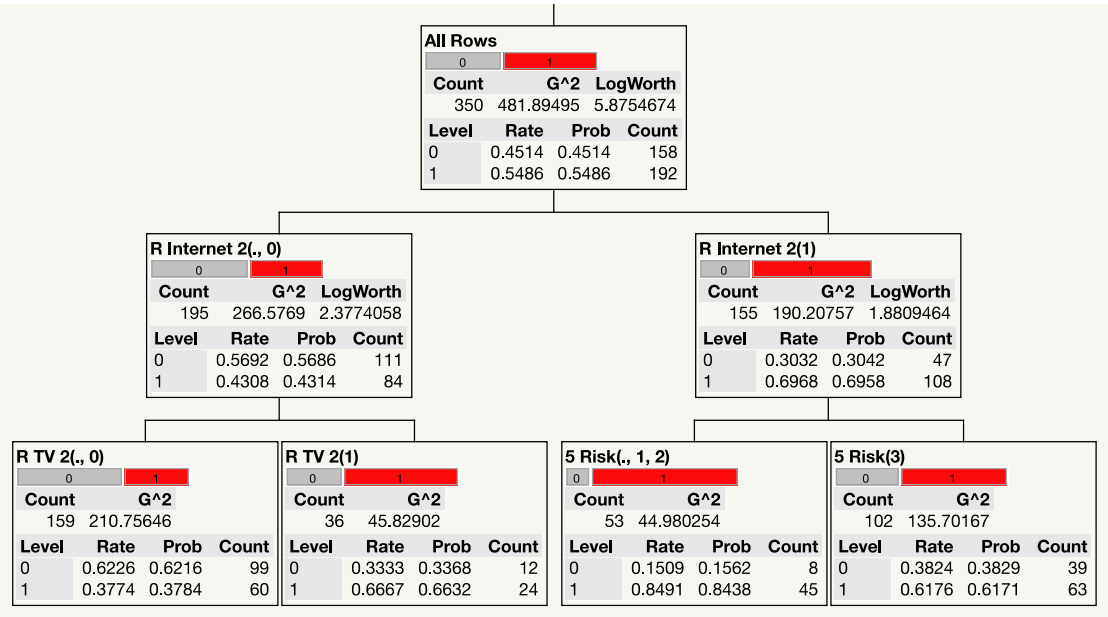

Figure 5.9 Decision tree with an initial state of pupils choosing the internet as the most credible channel for Scenario 5 – researching tuberculosis

From the tree the following groups of profiles can be recognised:

The profile of a pupil with the greatest likelihood to perceive the internet as the most credible information channel for Scenario 5 (a self-generated task seeking reference information), is a pupil who also perceives the internet to be most credible channel for the other reference information need and perceives the risk to be low/medium. The rate is 84.91% (45/53), compared to the overall rate of 54.86%.

The profile of a pupil with the greatest likelihood NOT to perceive the internet as the most credible information channel for Scenario 5 (a self-generated task seeking reference information) is a pupil whose first choice for reference information is also NOT the internet; television is not the pupil's most credible choice either. The rate is 62.26% (99/159), compared to the overall rate of 45.14%.

The R^2 value indicates that only 12.14% of the variance is accounted for by the model. The misclassification rate is 30.57% (107/350).

The chi-squared test was applied to determine whether there was an association between the choice of the internet as the most credible information channel for research on tuberculosis and pupils' grades. Table 5.39 shows the contingency table for the proportions of these variables. (An explanation of the figures contained in the

contingency tables, how they were calculated and how to interpret the results is given in Appendix K.)

N=350		Internet chosen for Scenario 5	Internet **not** chosen for Scenario 5	Total
Grade 8	Count	109	108	217
	Total %	31.14	30.86	62.00
	Col %	56.77	68.35	
	Row %	50.23	49.77	
Grade 12	Count	83	50	133
	Total %	23.71	14.29	38.00
	Col %	43.23	31.65	
	Row %	62.41	37.59	
Total	Count	192	158	350
	Total %	54.86	45.14	

Table 5.39 Contingency table for choice of the internet for Scenario 5 – researching tuberculosis and pupil's grade

To determine if the association is statistically significant, the Pearson chi-squared test was conducted. Null hypothesis: No statistically significant association exists between the choice of the internet and the pupil's grade. Alternative hypothesis: A statistically significant association exists between the choice of the internet and the pupil's grade. If the p-value is smaller than 0.05 the null hypothesis is rejected as in this case. The results revealed that there was a significant association between the two variables (chi-squared value = 4.963, df =2, p=0.0263).

A copy of the table is included here with specific numbers highlighted to illustrate the association. Of the pupils who chose the internet for Scenario 5, the ratio of grade 8s to grade 12s was 56.77% to 43.23%, while the overall ratio of grade 8s to grade 12s was 66.00% to 38.00%, indicating a higher than expected proportion of grade 12s choosing the internet. Thus it is statistically significant that pupils' choice of the internet for this information need and their grade are dependent. Of the grade 8s, 50.23% (109/217) chose the internet while 62.41% (83/133) of the grade 12s chose the internet. The data indicates that a grade 12 pupil is more likely to choose the internet than a grade 8 one for reference information on tuberculosis.

N=350		Internet chosen for Scenario 5	Internet **not** chosen for Scenario 5	Total
Grade 8	Count	109	108	217
	Total %	31.14	30.86	**62.00**
	Col %	**56.77**	68.35	
	Row %	50.23	49.77	
Grade 12	Count	83	50	133
	Total %	23.71	14.29	**38.00**
	Col %	**43.23**	31.65	
	Row %	62.41	37.59	
Total	Count	192	158	350
	Total %	54.86	45.14	

5.4.1.6 Scenario 6 – Cell phone rates for a school project

Finding information about cell phone rates for a school project was categorised as typical of an imposed, commercial information need. Because not all pupils recorded all the requested information, the N values for these questions vary. Table 5.10 shows the variations in the N values for responses for all the scenarios.

Table 5.40 shows the responses of the participants to the question on previous experience with finding information on cell phone rates for a school project.

N=383	School A	School B	School C	Boys	Girls	17/18-year-olds	13/14-year-olds	Total
Number with experience	9	122	19	66	84	77	50	150
Percentage with experience	56%	37%	51%	43%	37%	44%	33%	39%
Number responding	16	330	37	153	230	177	152	383

Table 5.40 Previous experience for Scenario 6 – cell phone rates

The majority of the pupils (233/383, 61%) reported not having had experience of looking for information in connection with cell phone rates. School B pupils reported having less experience (122/330, 37%) of finding information about cell phone rates than the other two schools, which recorded 9/16 (56%) and 19/37 (51%). The 17/18-year-old pupils (77/177, 44%) reported more experience at finding cell phone rate information than 13/14-year-old pupils (50/152, 33%).

Pupils' rating of the risk of using incorrect information when finding out cell phone rates for a school project is shown in Table 5.41.

Risk perception (N=266)	Number of pupils	Percentage
Low	69	26%
Medium	66	25%
Serious	131	49%
Total	266	100%

Table 5.41 Perception of risk in using incorrect information for Scenario 6 – cell phone rates for a school project

The data indicates that the biggest group of pupils (131/266, 49%) perceive a serious risk associated with using incorrect information while researching cell phone rates. In order to get a quantitative measure of this perception, low risk perception was given a value of 1, medium a value of 2 and serious a value of 3. Finding a weighted mean of all the risk perceptions gives a perceived risk value of 2.23 for incorrect information when researching cell phone rates for a school project.[21]

Pupils' ranking of the top five information channels they consider most credible of the listed 10 information channels is shown in Table 5.42. The mean rank for each information channel was also calculated[22]. This can be used to compare perceptions. This mean rank is shown in the last row of the table and is used as the basis on which to sort the information channels from the one perceived to be most credible for information relevant to cell phone rates for a school project on the left to the one perceived to be least credible on the right. The **bottom row is rankings,** so the lower the number, the more credible the information channel is perceived to be.

N=336 Ranking	Internet	Television	Magazines	Brochures	Newspapers	Experts	Friends	Family	Teachers	Books
1	120	29	17	37	13	32	11	13	41	21
2	63	34	47	24	18	21	16	20	20	26
3	21	41	48	28	48	22	33	20	10	17
4	21	52	33	20	33	23	36	35	9	14
5	25	37	39	16	33	26	40	37	10	21
Number in top 5	250	193	184	125	145	124	136	125	90	99
Number not in top 5	86	143	152	211	191	212	200	211	246	237
Mean rank	3.59	5.23	5.35	6.00	6.01	6.13	6.21	6.33	6.44	6.49

Table 5.42 Perceptions of information channel credibility for Scenario 6 – cell phone rates for a school project

The mean rank reflects pupils' perceptions of the particular information channel's credibility. From Table 5.42 it is evident that fewer pupils perceive books, teachers or family to be credible information channels when researching cell phone rates for a school project. On the other hand, more pupils perceive the internet, television and

[21] (69x1 + 66x2 + 131x3)/266 = 2,23

[22] An unranked entry cannot be omitted, as this would skew the data, so since an unranked information channel could have been a 6, 7, 8, 9 or 10, all information channels not ranked in the top five are allocated the mean of these possible rankings (6+7+8+9+10)/5=8. This decision is based on the advice of a qualified statistician.

magazines to be credible information channels when researching cell phone rates for a school project.

Pupils' reasons for their choice of the most credible information channel for finding information on cell phone rates for a school project are shown in Table 5.43. They were only required to give a reason for their choice of the most credible information channel**.** The four reasons are sorted from most to least popular for ease of analysis. The 12 alternative open-ended options given by pupils are not included in these figures, but will be discussed thematically in Section 5.8.1.

N=334 Reason for choosing an information channel as most credible	Total for each reason
Trust information from this channel	91 (27%)
Channel has information you want	67 (20%)
Trust the person (who supplied/created the information)	60 (18%)
Trust because of past experience	53 (16%)
No reason given	63 (19%)

Table 5.43 Reasons for choice of most credible channel in Scenario 6 – cell phone rates for a school project

The predominant reason indicated by pupils for trusting a particular information channel when finding information about cell phone rates for a school project was that they trusted information from this channel (91/334, 27%) and the reason given least often was past experience (53/334,16%).

A decision tree was used to determine the profile of pupils choosing the internet as the most credible channel for information for this scenario and this is illustrated in Figure 5.10. This process is explained fully in Appendix J. In this diagram CO Teachers represents the choice (or not) of teachers as an information channel for commercial information needs, CO Newspaper represents the choice (or not) of newspapers as an information channel for commercial information needs and CO Family represents the choice (or not) of family members as an information channel for commercial information needs.

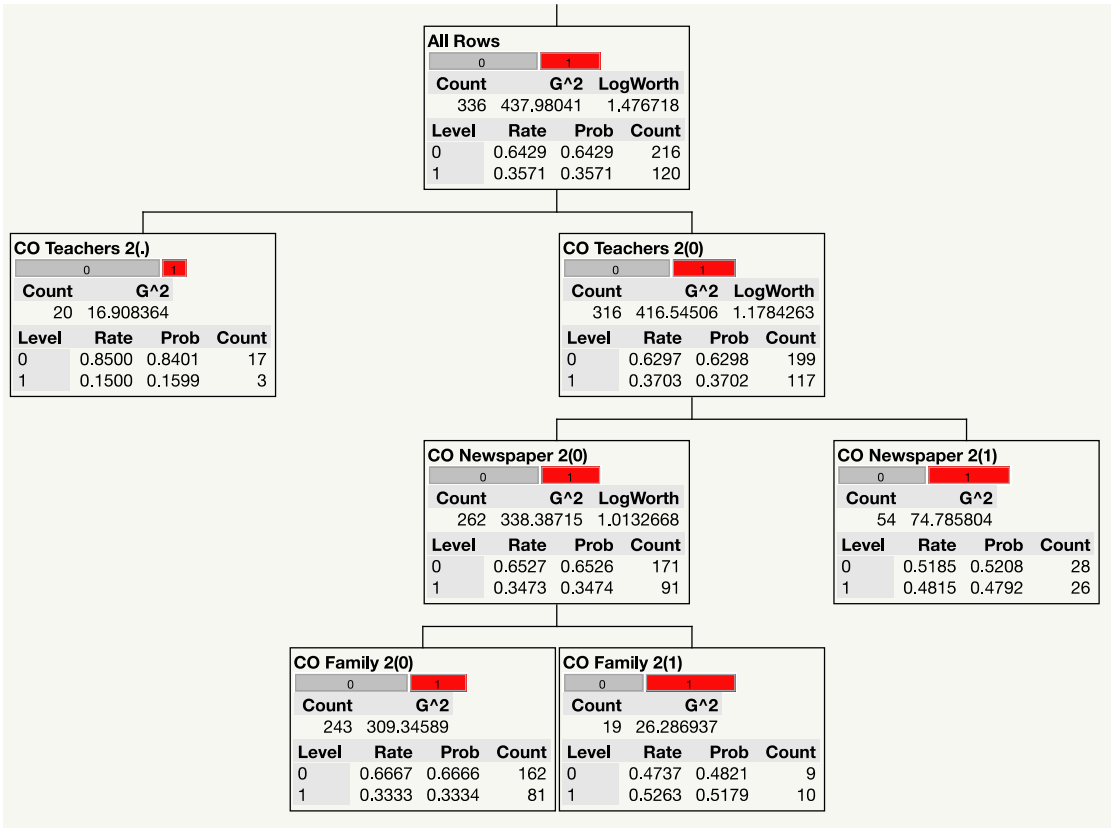

Figure 5.10 Decision tree with an initial state of pupils choosing the internet as the most credible channel for Scenario 6 – researching cell phone rates for a school project

From the tree the following groups of profiles can be recognised:

The profile of a pupil with the greatest likelihood to perceive the internet as the most credible information channel for Scenario 6 (an imposed task seeking commercial information) is a pupil whose first choice for the other commercial information need is NOT teachers and NOT newspapers, but who chooses family members as the most credible information channel for the other commercial information need. The rate is 52.63% (10/19) compared to the overall rate of 35.71%.

A pupil with the greatest likelihood NOT to perceive the internet as the most credible information channel for Scenario 6 (an imposed task seeking commercial information) does NOT choose teachers, does NOT choose newspapers and does NOT choose family as the most credible channel for the other commercial information need. The rate is 66.67% (162/243) compared to the overall rate of 64.29%.

The R^2 value indicates that only 2.43% of the variance is accounted for by the model, which is not a particularly good fit. The misclassification rate is 35.42% (119/336).

The chi-squared test was applied to determine whether there was an association between the choice of the internet as the most credible information channel for research on cell phone rates for a school project and the pupils' perception of the risk associated with acting on incorrect information. Table 5.44 shows the contingency table for the proportions of these variables. (An explanation of the figures contained in the contingency tables, how they were calculated and how to interpret the results is given in Appendix K.)

N=247		Internet chosen for Scenario 6	Internet **not** chosen for Scenario 6	Total
Risk low (1)	Count Total % Col % Row %	22 8.91 24.44 36.67	38 15.38 24.20 63.33	60 24.29
Risk medium (2)	Count Total % Col % Row %	32 12.96 35.56 50.00	32 12.96 20.38 50.00	64 25.91
Risk serious (3)	Count Total % Col % Row %	36 14.57 40.00 29.27	87 35.22 55.41 70.73	123 49.80
Total	Count Total %	90 36.44	157 63.56	247

Table 5.44 Contingency table for choice of the internet and risk perception for Scenario 6 – researching cell phone rates for a school project

To determine if the association was statistically significant, the Pearson chi-squared test was conducted. Null hypothesis: No statistically significant association exists between the choice of the internet and risk perception. Alternative hypothesis: A statistically significant association exists between the choice of the internet and risk perception. If the p-value is smaller than 0.05 the null hypothesis is rejected as in this case. The results revealed that there was a significant association between the two variables (chi-squared value = 7.814, df =2, p=0.0201).

A copy of the table is included here with specific numbers highlighted to illustrate the association. Among the pupils perceiving the risk associated with cell phone rates to be high (third row), the ratio of those not choosing the internet to those choosing it is 70.73% to 29.27%,

N=247		Internet chosen for Scenario 6	Internet **not** chosen for Scenario 6	Total
Risk low (1)	Count Total % Col % Row %	22 8.91 24.44 36.67	38 15.38 24.20 63.33	60 24.29
Risk medium (2)	Count Total % Col % Row %	32 12.96 35.56 50.00	32 12.96 20.38 50.00	64 25.91
Risk serious (3)	Count Total % Col % **Row %**	36 14.57 40.00 **29.27**	87 35.22 55.41 **70.73**	123 49.80
Total	Count **Total %**	90 **36.44**	157 **63.56**	247

while the overall ratio is 63.56% to 36.44%, indicating a higher than expected proportion of pupils who did not choose the internet when they perceived the risk to be high. Thus it is statistically significant that pupils' choice of the internet (or not) for cell phone rate information and their risk perception are dependent. If the risk is low, 36.67% (22/60) choose the internet while if the risk is high 29.27% (36/123) choose the internet. The data indicates that if pupils perceive the risk to be high, they are also inclined not to choose the internet for cell phone information.

5.4.1.7 Scenario 7– Information on entering a television talent show

Finding information about entering a television talent show was categorised as typical of a self-generated, leisure information need. (The reasoning for this was explained in the introduction to Section 5.4.1.) Because not all pupils recorded all the requested information, the N values for these questions vary. Table 5.10 shows the variations in the N values for responses for all the scenarios.

Table 5.45 shows the responses of the participants to the question on previous experience of finding information on a television talent show.

N=383	School A	School B	School C	Boys	Girls	17/18-year-olds	13/14-year-olds	Total
Number with experience	4	119	21	49	95	52	64	144
Percentage with experience	25%	36%	66%	31%	42%	29%	42%	38%
Number responding	16	335	32	158	225	177	151	383

Table 5.45 Previous experience for Scenario 7 – television talent show

The majority of the pupils (239/383, 62%) reported not having had experience of looking for information in connection with a television talent show. Pupils from school C reported having more experience at finding information about entering a television talent show (21/32, 66%) – with schools A and B reporting only 4/16, 25% and 119/335, 36% respectively. Also noteworthy is the number of boys indicating that they did not have experience of finding information about entering a talent show (49/158, 31%) compared to girls (95/225, 42%). The 17/18-year-old pupils (52/177, 29%) had substantially less

experience of finding information on entering a television talent show than the 13/14-year-old group (64/151, 42%).

Pupils' rating of the risk of using incorrect information when researching a television talent show is shown in Table 5.46.

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Risk perception (N=267)	Number of pupils	Percentage
Low	96	36%
Medium	68	25%
Serious	103	39%
Total	267	100%

Table 5.46 Perception of risk in using incorrect information for Scenario 7 – television talent show

The data indicates that pupils perceive the risk associated with using incorrect information while researching entering a television talent show to be either serious or low. In order to get a quantitative measure of this perception, low risk perception was given a value of 1, medium a value of 2 and serious a value of 3. Finding a weighted mean of all the risk perceptions gives a perceived risk value of 2.03 for incorrect information when researching to enter a television talent show.[23]

Pupils' ranking of the top five information channels they consider most credible of the listed 10 information channels is shown in Table 5.47. The mean rank for each information channel was also calculated[24]. This can be used to compare perceptions. This mean rank is shown in the last row of the table and is used as the basis on which to sort the information channels from the one perceived to be most credible for information on entering a television talent show on the left to the one perceived to be least credible on the right. The **bottom row is rankings,** so the lower the number, the more credible the information channel is perceived to be.

[23] (96x1 + 68x2 + 103x3)/267 = 2,03

[24] An unranked entry cannot be omitted, as this would skew the data, so since an unranked information channel could have been a 6, 7, 8, 9 or 10, all information channels not ranked in the top five are allocated the mean of these possible rankings (6+7+8+9+10)/5=8. This decision is based on the advice of a qualified statistician.

N=325 Ranking	Internet	Television	Magazines	Friends	Newspapers	Experts	Family	Brochures	Books	Teachers
1	122	88	14	21	12	26	7	16	8	6
2	41	58	50	31	26	12	19	17	19	10
3	30	34	59	31	48	14	22	14	16	11
4	24	36	46	41	39	16	21	21	16	13
5	37	33	24	34	26	36	39	24	9	20
Number in top 5	254	249	193	158	151	104	108	92	68	60
Number not in top 5	71	76	132	167	174	221	217	233	257	265
Mean rank	3.52	3.76	5.08	5.68	5.80	6.47	6.54	6.65	6.95	7.17

Table 5.47 Perceptions of information channel credibility for Scenario 7 – television talent show

The mean rank reflects pupils' perceptions of the particular information channel's credibility. From Table 5.47 it is evident that fewer pupils perceive teachers, books or brochures to be credible information channels when researching entering a television talent show. On the other hand, more pupils perceive the internet, television and magazines to be credible information channels when researching entering a television talent show.

Pupils' reasons for their choice of the most credible information channel for finding information on a television talent show are shown in Table 5.48. They were only required to give a reason for their choice of the most credible information channel**.** The four reasons are sorted from most to least popular for ease of analysis. The 10 alternative open-ended options given by pupils are not included in these figures, but will be discussed thematically in Section 5.8.1.

N=320 Reason for choosing an information channel as most credible	Total for each reason
Trust information from this channel	101 (32%)
Trust the person (who supplied/created the information)	59 (18%)
Channel has information you want	58 (18%)
Trust because of past experience	51 (16%)
No reason given	51 (16%)

Table 5.48 Reasons for choice of most credible channel in Scenario 7 – television talent show

The predominant reason indicated by pupils for trusting a particular information channel when finding information about a television talent show was that they trusted information from this channel (101/320, 32%) and the reason given least often was trust because of past experience (51/320,16%).

A decision tree was used to determine the profile of pupils choosing the internet as the most credible channel for information for this scenario and this is illustrated in Figure 5.11. This process is explained fully in Appendix J. In this diagram L TV represents the choice (or not) of television for leisure information needs and L Internet represents the choice (or not) of the internet for leisure information needs.

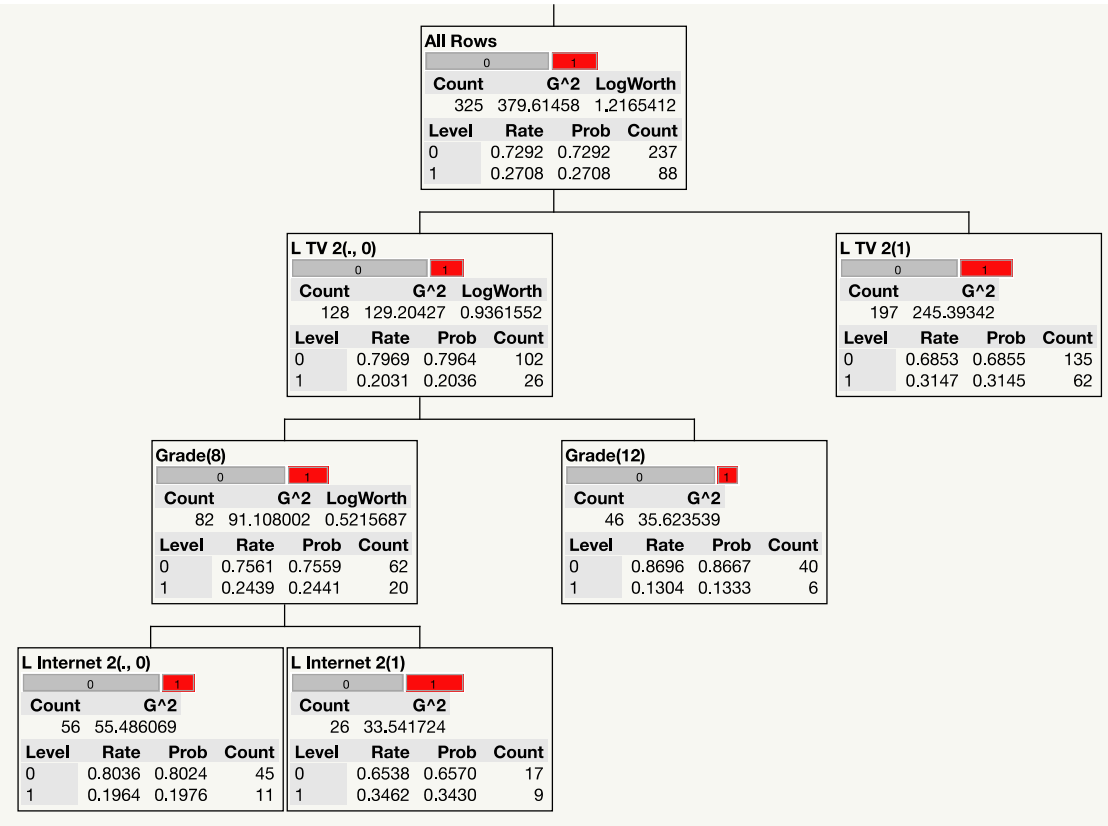


Figure 5.11 Decision tree with an initial state of pupils choosing television as the most credible channel for Scenario 7 – researching a television talent show

The profile of a pupil with the greatest likelihood NOT to perceive television as the most credible information channel for Scenario 7 (a self-generated task seeking leisure information) is a pupil in grade 12 who does NOT choose television as the most credible channel for the other leisure information need. The rate is 86.96% (40/46), compared to the overall rate of 72.92%.

The R^2 value indicates that only 2.52% of the variance is accounted for by the model, which is not a particularly good fit. The misclassification rate is 27.08% (88/325).

The chi-squared test was applied to determine whether there was an association between the choice of the internet as the most credible information channel for research on a television talent show and pupils' perception of the risk associated with acting on incorrect information. Table 5.49 shows the contingency table for the proportions of these variables. (An explanation of the figures contained in the contingency tables, how they were calculated and how to interpret the results is given in Appendix K.)

N=247		Internet chosen for Scenario 7	Internet **not** chosen for Scenario 7	Total
Risk low (1)	Count Total % Col % Row %	23 9.31 27.06 27.06	62 25.10 38.27 72.94	85 34.41
Risk medium (2)	Count Total % Col % Row %	19 7.69 22.35 28.79	47 19.03 29.01 71.21	66 26.72
Risk serious (3)	Count Total % Col % Row %	43 17.41 50.59 44.79	53 21.46 32.72 55.21	96 38.87
Total	Count Total %	85 34.41	162 65.59	247

Table 5.49 Contingency table for choice of the internet and risk perception for Scenario 7 – television talent show

To determine if the association is statistically significant, the Pearson chi-squared test was conducted. Null hypothesis: No statistically significant association exists between the choice of the internet and risk perception. Alternative hypothesis: A statistically significant association exists between the choice of the internet and risk perception. If the p-value is smaller than 0.05 the null hypothesis is rejected as in this case. The results revealed that there was a significant association between the two variables (chi-squared value = 7.544, df =2, p=0.0230). A copy of the table is included here with specific numbers highlighted to illustrate the association. Among the pupils perceiving the risk associated with information about a television talent show to be high (third row), the ratio of those not choosing the internet to those choosing it is 55.21% to 44.79%, while the overall ratio is 65.59% to 34.41%, indicating that a higher than expected proportion of pupils choose the internet when they perceive the risk to be high. Thus it is statistically significant that pupils' choice of the internet (or not) for television talent show information and their risk perception are dependent. If the risk is low, 26.06% (23/62) choose the internet while if the risk is high 44.79% (43/96) choose the internet. The data indicates that if a pupil

N=247		Internet chosen for Scenario 7	Internet **not** chosen for Scenario 7	Total
Risk low (1)	Count Total % Col % Row %	23 9.31 27.06 27.06	62 25.10 38.27 72.94	85 34.41
Risk medium (2)	Count Total % Col % Row %	19 7.69 22.35 28.79	47 19.03 29.01 71.21	66 26.72
Risk serious (3)	Count Total % Col % **Row %**	43 17.41 50.59 **44.79**	53 21.46 32.72 **55.21**	96 38.87
Total	Count **Total %**	85 **34.41**	162 **65.59**	247

perceives the risk to be high, they are also inclined to choose the internet for television talent show information.

5.4.1.8 Scenario 8 – Political party history for a school project

Finding information about political parties for a school project was categorised as typical of an imposed, current affairs information need. Because not all pupils recorded all the requested information, the N values for these questions vary. Table 5.10 shows the variations in the N values for responses for all the scenarios.

Table 5.50 shows the responses of the participants to the question on previous experience of finding information on the history of political parties.

N=374	School A	School B	School C	Boys	Girls	17/18-year-olds	13/14-year-olds	Total
Number with experience	11	140	21	67	105	66	79	172
Percentage with experience	69%	43%	72%	44%	47%	37%	53%	46%
Number responding	16	329	29	151	223	178	148	374

Table 5.50 Previous experience for Scenario 8 – political party history

There is a fairly even split between pupils who reported having experience of researching information on political party history and those without such experience, although only a slight majority (202/374, 54%) have not had experience of this information need. Pupils from school B (140/329, 43%) have substantially less experience of finding political history information than those in the other two schools. Also noteworthy is the low number of 17/18-year-old pupils indicating that they did have experience of looking for political history information (66/178, 37%) compared to the 13/14-year-old group (79/148, 53%).

Pupils' rating of the risk of using incorrect information when researching political party history for a school project is shown in Table 5.51.

Risk perception (N=257)	Number of pupils	Percentage
Low	54	21%
Medium	70	27%
Serious	133	52%
Total	257	100%

Table 5.51 Perception of risk in using incorrect information for Scenario 8 – political party history for a school project

The data indicates that the biggest group of pupils (133/257, 52%) perceive a serious risk associated with using incorrect information while researching political parties for a school project. In order to get a quantitative measure of this perception, low risk perception was given a value of 1, medium a value of 2 and serious a value of 3. Finding a weighted mean[25] of all the risk perceptions gives a perceived risk value of 2.31 for incorrect information when researching political parties' histories for a school project.

Pupils' ranking of the top five information channels they consider most credible of the listed 10 information channels is shown in Table 5.52. The mean rank for each information channel was also calculated[26]. This can be used to compare perceptions. This mean rank is shown in the last row of the table and is used as the basis on which to sort the information channels from the one perceived to be most credible for information on political parties for a school project on the left to the one perceived to be least credible on the right. The **bottom row is rankings,** so the lower the number, the more credible the information channel is perceived to be.

[25] (54x1+70x2+133x3)/257 = 2,31

[26] An unranked entry cannot be omitted, as this would skew the data, so since an unranked information channel could have been a 6, 7, 8, 9 or 10, all information channels not ranked in the top five are allocated the mean of these possible rankings (6+7+8+9+10)/5=8. This decision is based on the advice of a qualified statistician.

N=321 Ranking	Internet	Newspapers	Books	Television	Teachers	Family	Magazines	Experts	Brochures	Friends
1	170	22	28	23	25	14	5	17	8	5
2	39	38	68	36	25	19	24	14	11	7
3	16	53	18	42	34	24	36	19	24	10
4	23	38	21	39	27	35	36	18	8	16
5	17	35	30	33	41	44	22	22	14	18
Number in top 5	265	186	165	173	152	136	123	90	65	56
Number not in top 5	56	135	156	148	169	185	198	231	256	265
Mean rank	2.87	5.18	5.30	5.38	5.74	6.12	6.23	6.64	7.02	7.24

Table 5.52 Perceptions of information channel credibility for Scenario 8 – political party history for a school project

The mean rank reflects pupils' perceptions of the particular information channel's credibility. From Table 5.52 it is evident that fewer pupils perceive friends, brochures or experts to be credible information channels when researching political party history for a school project. On the other hand, more pupils perceive the internet, newspapers and books to be credible information channels when researching political party history for a school project.

Pupils' reasons for their choice of the most credible information channel for finding information on political party history for a school project are shown in Table 5.53. They were only required to give a reason for their choice of the most credible information channel**.** The four reasons are sorted from most to least popular for ease of analysis. The six alternative open-ended options given by pupils are not included in these figures, but will be discussed thematically in Section 5.8.1.

N=317 Reason for choosing an information channel as most credible	Total for each reason
Trust information from this channel	105 (33%)
Trust because of past experience	62 (20%)
Trust the person (who supplied/created the information)	49 (15%)
Channel has information you want	48 (15%)
No reason given	53 (17%)

Table 5.53 Reasons for choice of most credible channel in Scenario 8 – political party history for a school project

The predominant reason indicated by pupils for trusting a particular information channel when finding information about political party history for a school project was that they trusted information from this channel (105/317, 33%) and the reason given least often was that the channel had the information they wanted (48/317,15%).

A decision tree was used to determine the profile of pupils choosing the internet as the most credible channel for information for this scenario and this is illustrated in Figure 5.12. This process is explained fully in Appendix J. In this diagram Experienced represents pupils who have previously had experience of this information need and the pupils' risk perception is grouped as high risk perception (3) or low to medium risk perception (1 and 2).

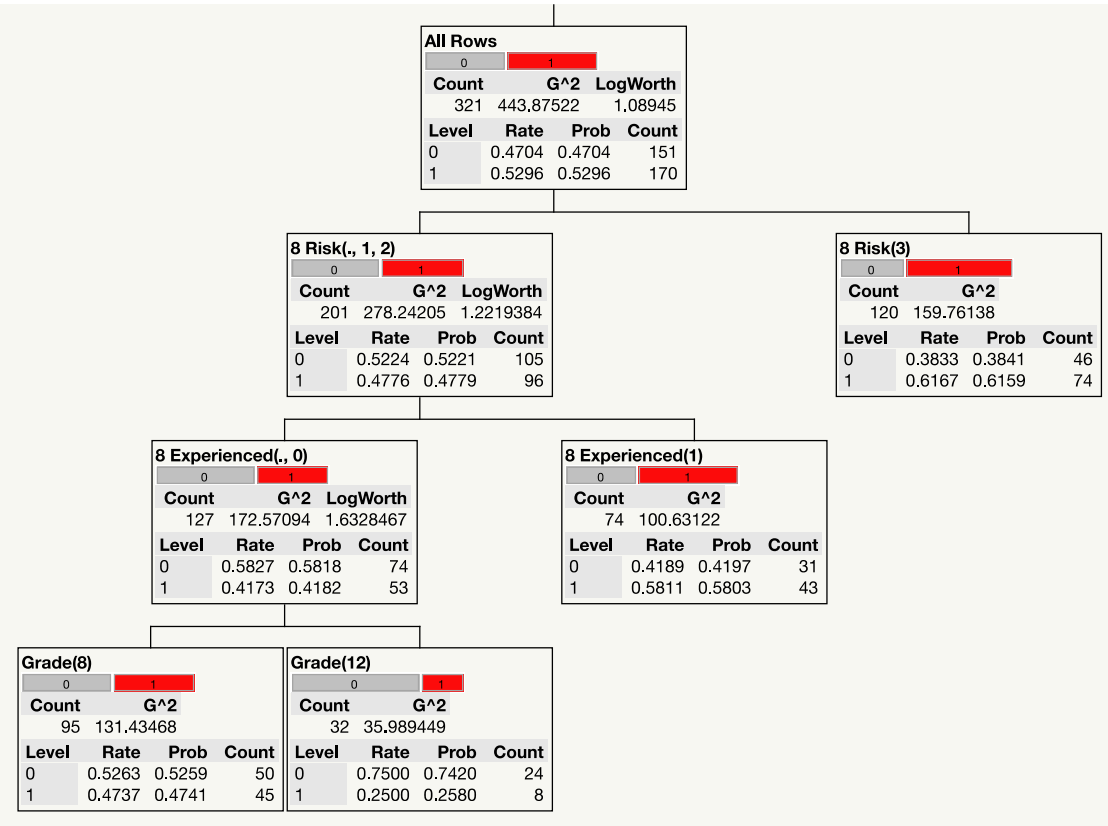


Figure 5.12 Decision tree with an initial state of pupils choosing the internet as the most credible channel for Scenario 8 – researching political party history for a school project

From the tree the following groups of profiles can be recognised:

The profile of a pupil with the greatest likelihood to perceive the internet as the most credible information channel for Scenario 8 (an imposed task seeking current affairs information) is either

1. A pupil who perceives the risk of incorrect information to be serious (3). The rate is 61.67% (74/120), compared to the overall rate of 52.96%.
2. A pupil who perceives the risk of incorrect information to be low or medium (1 or 2), but has also had experience of researching political parties. The rate is 58.11% (43/74), compared to the overall rate of 52.96%.

The profile of a pupil with the greatest likelihood NOT to perceive the internet as the most credible information channel for Scenario 8 (an imposed task seeking current affairs information) is a grade 12 pupil who perceives the risk of incorrect information to be low or medium (risk = 1 or 2) and has had no experience of researching political parties. The rate is 75% (24/32), compared to the overall rate of 47.04%.

The R^2 value indicates that only 3.62% of the variance is accounted for by the model, which is not a particularly good fit. The misclassification rate is 40.50% (130/321).

The chi-squared test was applied to determine whether there was an association between the choice of the internet as the most credible information channel for research on political party history and pupils' perception of the risk associated with acting on incorrect information. Table 5.54 shows the contingency table for the proportions of these variables. (An explanation of the figures contained in the contingency tables, how they were calculated and how to interpret the results is given in Appendix K.)

N=238		Internet chosen for Scenario 8	Internet **not** chosen for Scenario 8	Total
Risk low (1)	Count	18	32	50
	Total %	7.56	13.45	21.01
	Col %	14.06	29.09	
	Row %	36.00	64.00	
Risk medium (2)	Count	36	32	68
	Total %	15.13	13.45	28.57
	Col %	28.13	29.09	
	Row %	52.94	47.06	
Risk serious (3)	Count	74	46	120
	Total %	31.09	19.33	50.42
	Col %	57.81	41.82	
	Row %	61.67	38.33	
Total	Count	128	110	238
	Total %	53.78	46.22	

Table 5.54 Contingency table for choice of the internet and risk perception for Scenario 8 – political party history

To determine if the association was statistically significant, the Pearson Chi-square test was conducted. Null hypothesis: No statistically significant association exists between the choice of the internet and risk perception. Alternative hypothesis: A statistically significant association exists between the choice of the internet and risk perception. If the p-value is smaller than 0.05 the null hypothesis is rejected as in this case. The results revealed that there was a significant association between the two variables (Chi-square value = 9.381, df =2, p=0.0092). A copy of the table is included here with specific numbers highlighted to illustrate the association. Of the pupils choosing the

N=238		Internet chosen for Scenario 8	Internet **not** chosen for Scenario 8	Total
Risk low (1)	Count	18	32	50
	Total %	7.56	13.45	**21.01**
	Col %	**14.06**	29.09	
	Row %	36.00	64.00	
Risk medium (2)	Count	36	32	68
	Total %	15.13	13.45	28.57
	Col %	28.13	29.09	
	Row %	52.94	47.06	
Risk serious (3)	Count	74	46	120
	Total %	31.09	19.33	**50.42**
	Col %	**57.81**	41.82	
	Row %	61.67	38.33	
Total	Count	128	110	238
	Total %	53.78	46.22	

internet for current affairs information, 14.06% perceived the risk to be low and 57.81% perceived the risk to be high, while the overall proportion for low and high risk is 21.01% and 50.42%, indicating a higher than expected proportion of pupils choosing the internet and perceiving the risk to be high. Thus it is statistically significant that pupils' risk perception and their choice of the internet are dependent. If the risk is low, 34.43% (21/61) choose the internet while if the risk is high 62.65% (104/166) choose the internet. The data indicates that the greater the risk perception, the greater the tendency to see the internet as the most credible current affairs information channel.

5.4.1.9 Scenario 9 – Open-ended option

Four scenarios represented assigned information needs and four were structured to represent typical self-generated information needs. Any task (and thus information need) set by someone else cannot be truly self-generated. Thus an extra open-ended scenario (Scenario 9) was included as a "truly self-generated" task. The wording used in the questionnaire was, "Write down a situation in the last six months where you needed to find information" and the instruction sheet for the survey supervisor to read to the pupils stated that "this is your own information need". This question was answered by 206 pupils. Adjusting for repetitions, this was reduced to 98 unique information needs. Of these examples, only 66 were regarded as typically self-generated information needs. The others related explicitly or implicitly to school tasks. Agosto and Hughes-Hassell (2006) found that school tasks were one of the main ELIS needs, so it should not come as a surprise that pupils listed school tasks here. All the information needs reported are included in Appendix I – repetitions are excluded.

Below the truly self-generated tasks are analysed thematically (according to guidelines from Rothbauer, 2008) in order to ascertain trends in what the pupil participants' ELIS needs are. (Wording is deliberately left exactly as entered by the children.)

Explicit and implicit school projects: School project; Humanities project; Technology project; Tourism project; World War I; HIV/AIDS project; Gold discovery and history of mining; Accounting project; Afrikaans essay; Alexander Fleming; Drake; Book review; Information on a book; English project; Design project; Life Orientation How to get a baby; LO Task on stress; Geography assignment on Africa; Business Project; Budget speech; Diamond discovery; Money Acts; Foreign exchange information; Flight MH 370; Public Speaking Topic

School related behaviour and skills: Why learners shun Maths; How to study for Maths Researching style and content of exam papers; Apply to New School; New school and clothes; XYZ High[27], Read on-line books
General skills: Blocking WiFi hacking; Make ginger beer; Decorate bedroom
Sport: Soccer statistics; Soccer boots; How to be a better soccer player; Basketball; Ronaldo soccer boots; Ronaldo's career; Increase sprint speed; Playing tennis; Neymar de Silva; Cricket batting technique; Physical exercise; School swimming gala; Netball match info
Leisure and entertainment: Kim Kardashan; Movies; Pitch Perfect; Dancing competition; Going out at night
Commercial: Shopping; Cell phone purchase; Choosing a car; Fastest car; Plane and train tickets; Clothes; Farewell party dress; Local tourist attractions; Roofs
Business: Trade union information; unemployment rate; BBBEE (Broad-Based Black Economic Empowerment); When was money invented
Social issues: Xenophobia; Drugs and alcohol; Political info; Conspiracy theories; Self-esteem evaluation
Post-school qualifications and careers: University application; Career and personality traits; Career and university info; Career chiropractor; SANDF career (South African National Defence Force) info; Rugby academy information; Models
Personal relationships: How to get on with a particular difficult peer; How to get over an ex; Relationship help; Where my dad came from
Health: Breast cancer; Cancer in the womb; Leg injury; How to get rid of black spots on face; Problem with knee; Thrush; Lung problems; Contraception; Ebola; Malaria; Body; Humans; Depression and self esteem

A number of the above topics, while not overtly imposed school tasks, might possibly be suggested by pupils getting background information for school needs, e.g. Trade union information; unemployment rate; BBBEE. Health issues are fairly prominent, as are sport interests and careers searches.

It is beneficial to consider the above genuinely self-generated topics in relation to the simulated self-generated topics used in the survey questionnaire. The simulated topics were: Reference – medical information, Commercial – buying a cell phone, Leisure – a television talent show, Current affairs – municipal politics. In the genuinely self-generated topics there is good representation of medical topics of interest to the pupils. Actual commercial information needs of the pupils include the exact simulated topic of

[27] Name changed to protect identity of one of the participating schools.

purchasing a cell phone. Pupils' leisure topics include a dance competition rather than the simulated self-generated topic of a talent show. Current affairs is also represented by the topic of "political info". Thus, in spite of the survey topics being simulated self-generated, this qualitative thematic analysis of the pupils' responses reveals that they do accurately correlate with pupils' genuinely self-generated needs.

5.4.1.10 Summary

Drawing together all the data from Section 5.4.1.1 to 5.4.1.8, one can pick up trends across the scenarios that are not evident individually.

Scenario	Experience	Risk perception	Credibility perception	Reason for choice
Scenario 1 Buy cell phone Self-generated Commercial	**Yes** 316 (77%) **No** 94 (23%)	**Low** 66 (19%) **Med** 99 (28%) **Serious** 187 (53%) **Ave** 2.34[28]	**Most credible** Internet Television Magazines **Not credible** Teachers Books Experts	1. Past experience with scenario 2. Trust information from the channel
Scenario 2 School project Research AIDS Imposed Reference	**Yes** 361 (92%) **No** 33 (8%)	**Low** 35 (10%) **Med** 66 (19%) **Serious** 250 (71%) **Ave** 2.61	**Most credible** Internet Teachers Books **Not credible** Friends Brochures Experts	1. Trust information from the channel 2. Past experience with scenario
Scenario 3 Municipal political parties Self-generated Current affairs	**Yes** 143 (37%) **No** 247 (63%)	**Low** 109 (39%) **Med** 68 (25%) **Serious** 101 (36%) **Ave** 1.97	**Most credible** Internet Television Newspapers **Not credible** Brochures Friends Books	1. Trust information from the channel 2. Has information you want
Scenario 4 School project Research movie Imposed Leisure	**Yes** 293 (76%) **No** 95 (24%)	**Low** 64 (20%) **Med** 79 (24%) **Serious** 183 (56%) **Ave** 2.37	**Most credible** Internet Television Books **Not credible** Brochures Newspapers Family	1. Trust information from the channel 2. Past experience with scenario

[28] The average risk perception was calculated by means of allocating a value of 1 for low risk, 2 for medium risk and a 3 for high risk perception. These were then averaged.

Scenario	Experience	Risk perception	Credibility perception	Reason for choice
Scenario 5 Tuberculosis TB Self-generated Reference	**Yes** 242 (62%) **No** 150 (38%)	**Low** 30 (10%) **Med** 42 (15%) **Serious** 219 (75%) **Ave** 2.65	**Most credible** Internet Teachers Television **Not credible** Friends Brochures Magazines	1. Trust information from the channel 2. Past experience with scenario
Scenario 6 School project Cell phone rate Imposed Commercial	**Yes** 150 (39%) **No** 233 (61%)	**Low** 69 (26%) **Med** 66 (25%) **Serious** 131 (49%) **Ave** 2.23	**Most credible** Internet Television Magazines **Not credible** Books Teachers Family	1. Trust information from the channel 2. Has information you want
Scenario 7 Television talent show Self-generated Leisure	**Yes** 144 (38%) **No** 239 (62%)	**Low** 96 (36%) **Med** 68 (25%) **Serious** 103 (39%) **Ave** 2.03	**Most credible** Internet Television Magazines **Not credible** Teachers Books Brochures	Trust 1. Trust information from the channel 2. Trust the person
Scenario 8 School project Political parties Imposed Current affairs	**Yes** 172 (46%) **No** 202 (54%)	**Low** 54 (21%) **Med** 70 (27%) **Serious** 131 (52%) **Ave** 2.31	**Most credible** Internet Newspapers Books **Not credible** Friends Brochures Experts	1. Trust information from the channel 2. Past experience with scenario

Table 5.55 Summary of details from all scenarios

The scenario with the highest percentage of past experience is assignments on research of AIDS (361/394, 92%). Although tuberculosis (including TB+HIV/AIDS) accounted for almost 100 000 deaths in 2014 (WHO, 2014), pupils have a limited experience of researching information on it (242/392, 62%). The lowest level of experience is related to information on political parties (143/390, 37%) for a typical self-generated information need and 172/374 (46%) for the school project. Most high school pupils have not researched entering a television talent show (144/383, 38%). It is surprising that while very few pupils have experience of researching cell phone rates (150/383, 39%), almost double the number (316/410, 77%) have researched buying a cell phone.

Risk perception for the two reference scenarios (AIDS and tuberculosis) were the highest (2.61 and 2.65 respectively; this was considered on a scale of 1 to 3, with 3 presenting the highest risk). The pupils' risk perception for the imposed school project (AIDS) was only marginally lower than the self-generated (tuberculosis) scenario,

indicating little effect of whether the task is self-generated or imposed. The two political scenarios highlight a totally different angle to the self-generated/imposed effect. Some of the pupils said very openly that they had no interest in politics; this finding was backed up by the lowest risk perception for Scenario 3 (mean of 1.96). However, the equivalent political question set in a school project was perceived as having a mean risk of 2.32.

From Table 5.55 it is difficult to note patterns with regard to information channel credibility, except for the fact that the greatest number of pupils chose the internet as their most credible channel in every scenario. Table 5.56 groups credibility perceptions for all scenarios to enable comparisons. A slightly different approach is used here in that only the pupils' first choice is counted (rationale for considering only the top choice is justified in Section 5.4.1). It is thus a compilation of the first rows of the information credibility tables in Sections 5.4.1.1 to 5.4.1.8. The table has been sorted from left to right, based on the overall totals of each information channel, i.e. overall more pupils consider the channels on the left to be credible than those on the right. Differences in specific scenarios are of interest.

N=2837	Internet	Television	Experts	Teachers	Books	Family	Newspaper	Brochures	Friends	Magazines
Scenario 1 Buy cell phone	137	63	38	1	11	18	12	50	35	33
Scenario 2 Research AIDS	251	12	34	42	20	18	11	8	4	5
Scenario 3 Municipal party policies	86	83	18	20	7	39	58	5	7	6
Scenario 4 Research movies	210	76	6	29	42	6	3	2	5	11
Scenario 5 Tuberculosis TB	192	17	38	31	20	22	6	6	9	3
Scenario 6 Cell phone rates	120	29	32	41	21	13	13	37	11	17
Scenario 7 Television talent show	122	88	26	6	8	7	12	16	21	14
Scenario 8 Political parties' history	170	23	17	25	28	14	22	8	5	5
All scenarios	1288	391	209	195	157	137	137	132	97	94

Table 5.56 Total number of most credible choices for all scenarios

According to Table 5.56, the three information channels perceived by pupils to be most credible across all scenarios are the internet, television and experts, while the least credible are magazines, friends and brochures. A useful perspective on Table 5.56 is to look down the column and note the contexts for which each information channel has its own greatest number of pupils perceiving it as most credible.

- Of the pupils considering the internet as most credible, the greatest number of pupils chose it for researching AIDS (even though the scenario was for a school task), followed by researching movies.
- Of the pupils considering television as most credible, the greatest number of pupils chose it for doing research about a television talent show, followed by research on municipal party policies.
- Of the pupils considering experts as most credible, the greatest number of pupils chose them for researching buying a cell phone or researching tuberculosis.
- Of the pupils considering teachers as most credible, the greatest number of pupils chose them for researching AIDS, followed by researching cell phone rates.
- Of the pupils considering books as most credible, the greatest number chose them for researching movies, followed by researching political party history.
- Of the pupils considering family members as most credible, the greatest number chose them for researching municipal party policies, followed by researching tuberculosis.
- Of the pupils considering newspapers as most credible, the greatest number chose them for researching municipal party policies, followed by researching political party history.
- Of the pupils considering brochures as most credible, the greatest number chose them for researching buying a cell phone, followed by researching cell phone rates.
- Of the pupils considering friends as most credible, the greatest number of pupils chose them for researching buying a cell phone, followed by researching entering a television talent show.
- Of the pupils considering magazines as most credible, the greatest number chose them for researching buying a cell phone, followed by researching cell phone rates.

Information channel credibility is perceived differently for different scenarios and thus Tables 5.62 and 5.63 indicate that pupils' perception of information channel credibility is

not constant, but is dependent on the context. The next two sections will regroup the data from the eight scenarios according to origin of information need (imposed or self-generated [i.e. simulated self-generated]) and type of information (reference, commercial, leisure or current affairs) to ascertain whether these specific aspects of context have an influence on pupils' credibility perceptions.

5.4.2 Effect on credibility perception of whether tasks are imposed or self-generated

This section will analyse whether there is a difference in credibility perception as a result of the origin of the task, i.e. whether it is imposed or self-generated (see Section 4.4.4.2). Half of the scenarios on the questionnaire represent imposed tasks and the other half represent self-generated tasks.

Table 5.57 shows the number of pupils selecting each of the information channels as their most credible choice. These are split according to whether the task was imposed or self-generated. The information channels are sorted from left to right, with the information channels selected most often on the left and those selected least often on the right.

	Internet	Television	Teachers	Books	Experts	Brochures	Family	Newspaper	Magazines	Friends	**Internet**	**Interpersonal**	**Printed material**	**Mass media**
Imposed tasks	751	140	137	111	89	55	51	49	38	25	**751**	**302**	**204**	**189**
	Internet	Television	Experts	Newspaper	Family	Brochures	Friends	Teachers	Magazines	Books	**Internet**	**Mass media**	**Interpersonal**	**Printed material**
Self-generated tasks	537	251	120	88	86	77	72	58	56	46	**537**	**339**	**336**	**179**

Table 5.57 Number of information channels chosen as most credible for imposed versus self-generated information needs

Table 5.57 shows the effect of credibility perceptions resulting from the origin of the information need. For both imposed and self-generated tasks the internet and television are chosen most often, followed by teachers for imposed needs and experts for self-generated needs. There is a noteworthy difference in the information channels chosen least often. For imposed tasks friends, magazines and newspapers are chosen least often as most credible information channel, while for self-generated needs books, magazines and teachers are chosen least often.

This appears to indicate that apart from the internet and television, whether an information need emanates from the school or the person does have an impact on pupils' perception of information channel credibility.

5.4.3 Effect on credibility perception of the type of information

In order to measure the effect of information type on credibility perceptions, the pupils selecting the most credible information channel for each information type were counted. Each information type was sorted from left to right according to the number of times pupils chose the information channel as most credible. The last four columns of the table are the channels regrouped into internet, mass media, printed material and interpersonal channels.

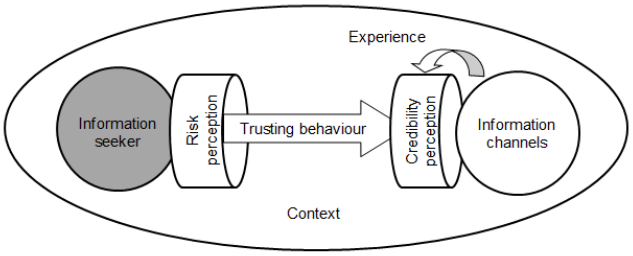
	Internet	Teachers	Experts	Books	Family	Television	Newspaper	Brochures	Friends	Magazines	**Internet**	**Interpersonal**	**Printed material**	**Mass media**
Reference	443	73	72	40	40	29	17	14	13	8	**443**	**198**	**62**	**46**
	Internet	Television	Brochures	Experts	Magazines	Friends	Teachers	Books	Family	Newspaper	**Internet**	**Interpersonal**	**Printed material**	**Mass media**
Commercial	257	92	87	70	50	46	42	32	31	25	**257**	**189**	**169**	**117**
	Internet	Television	Books	Teachers	Experts	Friends	Magazines	Brochures	Newspaper	Family	**Internet**	**Mass media**	**Interpersonal**	**Printed material**
Leisure	332	164	50	35	32	26	25	18	15	13	**332**	**179**	**106**	**93**
	Internet	Television	Newspaper	Family	Teachers	Books	Experts	Brochures	Friends	Magazines	**Internet**	**Mass media**	**Interpersonal**	**Printed material**
Current affairs	256	106	80	53	45	35	35	13	12	11	**256**	**186**	**145**	**59**

Table 5.58 Number of information channels chosen as most credible for each information type

Table 5.58 shows that for all types of information the internet was chosen between 100% and 500% more times than the next most popular choice. Overall the second most chosen channel was television. For reference information, the information channels chosen as most credible were the internet, teachers and experts. For commercial information, the information channels chosen as most credible were the internet, television and brochures. For leisure information, the information channels chosen as most credible were the internet, television and books. For current affairs information, the information channels chosen as most credible were the internet, television and newspapers.

From the above it is evident that pupils' perceptions of information channel credibility are affected by the type of information needed.

5.5 PUPIL AS TRUSTOR/INFORMATION SEEKER



The next step of the analysis narrows the focus from general information down to characteristics specific to each of the pupils themselves. This covers their age, gender, channels through which they gained their background knowledge of the types of information of interest to this study. Also of interest is the level of internet exposure of each of the pupils.

5.5.1 Effect of age on credibility perception

The data was analysed to ascertain whether there was any age-related difference in pupils' perception of information credibility. The rationale for the selection of 13/14-year-old and 17/18-year-old age groups is described in Section 5.3.3.2; it was intended to involve as wide an age range as possible within a high school. These groupings cover 80% of the total sample (see Table 5.9) and the omission of the other ages in this section is deliberate, to be able to focus on the age effect. The number of 13/14-year-old pupils choosing each of the information channels for a particular scenario was determined and the relative percentages calculated. The same was done for the 17/18-year-olds. For purposes of comparison and clarity only the percentages are shown in Table 5.59.

Scenario	Age group		Internet	Books	Brochures	Magazines	Newspaper	Television	Friends	Family	Teachers	Experts
1. Cell phone purchase	13/14-year-olds	N=177	35%	2%	11%	9%	1%	24%	6%	7%	0%	5%
	17/18-year-olds	N=160	35%	2%	15%	7%	5%	9%	9%	2%	1%	13%
2. AIDS project	13/14-year-olds	N=174	58%	3%	0%	2%	5%	4%	1%	5%	12%	10%
	17/18-year-olds	N=167	68%	6%	3%	0%	0%	2%	1%	4%	8%	7%
3. Municipal politics	13/14-year-olds	N=176	26%	2%	1%	2%	16%	30%	1%	9%	7%	6%
	17/18-year-olds	N=101	30%	2%	3%	0%	19%	17%	3%	16%	3%	7%
4. Movie essay	13/14-year-olds	N=178	46%	7%	0%	4%	0%	30%	2%	3%	5%	3%
	17/18-year-olds	N=160	62%	13%	0%	1%	1%	10%	1%	1%	9%	1%
5. TB concern	13/14-year-olds	N=174	49%	5%	1%	1%	3%	6%	1%	8%	10%	15%
	17/18-year-olds	N=117	66%	7%	3%	1%	0%	2%	5%	2%	6%	8%
6. Cell phone rates	13/14-year-olds	N=175	33%	6%	10%	5%	4%	11%	3%	6%	13%	9%
	17/18-year-olds	N=104	41%	5%	14%	6%	4%	4%	4%	1%	12%	13%
7. Talent show	13/14-year-olds	N=172	37%	2%	5%	6%	5%	31%	3%	3%	2%	7%
	17/18-year-olds	N=97	41%	3%	5%	1%	2%	24%	9%	1%	2%	11%
8. Political project	13/14-year-olds	N=170	56%	6%	2%	1%	5%	9%	1%	4%	9%	6%
	17/18-year-olds	N=102	53%	12%	2%	2%	8%	4%	3%	5%	5%	6%
Overall percentages across all scenarios for each age group	13/14-year-olds	N=1396	42%	4%	4%	4%	5%	18%	2%	6%	7%	7%
	17/18-year-olds	N=1008	51%	6%	6%	2%	4%	8%	4%	4%	6%	8%

Table 5.59 Percentage of pupils choosing information channel credibility by 13/14- and 17/18-year-old age groups

Looking at the totals, a higher percentage of the 17/18-year-olds (51%, 515/1006) selected the internet as the most credible channel than the 13/14-year-olds (42%,

592/1394). Television was chosen as the most credible channel by a higher percentage (18%, 256/1394) of the 13/14-year-olds than the 17/18-year-olds (8%, 84/1006). It is perhaps useful to focus on the actual scenarios where there is the greatest difference between the age groups. The biggest difference between the percentage of 17/18-year-olds and 13/14-year-olds choosing the internet was when researching tuberculosis, movies and AIDS research (in each case the older group favouring the internet). The biggest difference between the percentage of 17/18-year-olds and 13/14-year-olds choosing the television was for movies, buying a cell phone and municipal politics (in each case the younger group favouring television).

The grades (8 and 12) for this survey were specifically chosen to give as wide a spread of ages as possible in high school (and gave rise to the bi-modal distribution of the ages peaking at 13/14 and 17/18 years old.) It is noteworthy that in the chi-squared tests referred to in Sections 5.4.1.2 to 5.4.1.5 (AIDS, municipal politics, movies and tuberculosis) the pupils' grades were found to have a significant influence on their credibility perception and thus the grade findings corroborated the age findings described in Table 5.59.

5.5.2 Effect of gender on credibility perception

This section will look at a possible gender effect on perceptions of information credibility across all information channels. The number of boys choosing each of the information channels for a particular scenario was determined and the relative percentages calculated. The same was done for the girls. For purposes of comparison and clarity only the percentages are shown in Table 5.60.

Scenario			Internet	Books	Brochures	Magazines	Newspaper	Television	Friends	Family	Teachers	Experts
1. Cell phone purchase	Boys	N=167	38%	3%	7%	8%	5%	14%	13%	4%	0%	10%
	Girls	N=231	31%	3%	16%	8%	2%	17%	6%	5%	0%	9%
2. AIDS project	Boys	N=167	60%	5%	2%	1%	2%	2%	2%	5%	11%	9%
	Girls	N=238	62%	5%	2%	2%	3%	3%	0%	4%	10%	8%
3. Municipal politics	Boys	N=135	27%	1%	1%	2%	17%	22%	4%	12%	7%	5%
	Girls	N=194	25%	3%	2%	2%	17%	26%	1%	12%	6%	6%
4. Movie essay	Boys	N=158	55%	11%	1%	3%	1%	17%	1%	0%	9%	1%
	Girls	N=232	52%	10%	0%	3%	0%	21%	1%	3%	6%	2%
5. TB concern	Boys	N=134	60%	5%	1%	0%	1%	5%	2%	6%	7%	11%
	Girls	N=210	52%	6%	2%	1%	2%	5%	3%	7%	10%	11%
6. Cell phone rates	Boys	N=138	37%	7%	10%	4%	5%	9%	4%	3%	13%	6%
	Girls	N=196	35%	6%	12%	6%	3%	9%	3%	5%	11%	12%
7. Talent show	Boys	N=124	36%	3%	3%	2%	4%	27%	10%	4%	2%	7%
	Girls	N=196	39%	2%	6%	6%	4%	27%	5%	1%	2%	9%
8. Political project	Boys	N=130	55%	8%	2%	2%	5%	7%	2%	4%	7%	8%
	Girls	N=187	52%	9%	3%	2%	8%	7%	1%	5%	8%	3%
Overall percentages across all scenarios	Boys	N=1153	46%	6%	3%	3%	5%	13%	5%	4%	7%	7%
	Girls	N=1684	44%	5%	5%	4%	5%	14%	2%	5%	7%	7%

Table 5.60 Percentage of pupils choosing information channel credibility by gender

As is evident from the table, there are no major perception differences between the genders. This is confirmation of the fact that the chi-squared tests referred to in Section 5.4.1.1 to 5.4.1.8 did not find any significant gender effect.

5.5.2.1 Relationship of gender and risk perceptions

Slovic (1999) noted that there might be a gender-based effect on risk perception and thus it is useful to analyse the relationship between risk perceptions and gender.

Table 5.61 shows the results of pupils' responses to the question of what they perceived the risk to be of acting on incorrect information in each of the scenarios. The figures show how many pupils indicated each risk level for each scenario. In order to get a

quantitative value from these ratings for comparisons, low was given a value of 1, medium a value of 2 and serious a value of 3. The mean of these was then calculated and the resultant weighted mean recorded in the last column. The weighted mean in this case is of risk perception so values will range between 1 and 3, reflecting a perception from low to serious. This data was presented in Sections 5.4.1.1 to 5.4.1.8 but in Table 5.61 it is differentiated according to gender.

Scenario			Low	Med	Serious	Weighted mean
1. Cell phone purchase	Boys	N=148	39	45	64	2.17
	Girls	N=204	27	54	123	2.47
2. AIDS project	Boys	N=143	18	32	93	2.52
	Girls	N=108	17	34	157	2.67
3. Municipal politics	Boys	N=117	52	29	36	1.86
	Girls	N=161	57	39	65	2.05
4. Movie essay	Boys	N=130	24	36	70	2.35
	Girls	N=196	40	43	113	2.37
5. TB concern	Boys	N=115	18	14	83	2.57
	Girls	N=176	12	28	136	2.70
6. Cell phone rates	Boys	N=113	31	27	55	2.21
	Girls	N=153	38	39	76	2.25
7. Talent show	Boys	N=108	52	26	30	1.80
	Girls	N=159	44	42	73	2.18
8. Political project	Boys	N=106	23	34	49	2.25
	Girls	N=151	31	36	84	2.35
Risk perception across all scenarios	Boys	N=980	257	243	480	2.23
	Girls	N=1408	266	315	827	2.40

Table 5.61 Risk perception according to gender

In Table 5.61 it can be seen that across every scenario, the boys perceived risk to be lower than the girls. A t-test shows that the boys' mean risk perception (2.23) was significantly lower than the girls' mean risk perception (2.40) (one tail t-value = 4.9166, df = 2387, $p<0.0001$). While the chi-squared tests and decision trees referred to in Sections 5.4.1.1 to 5.4.1.8 found risk perceptions to have an effect on information credibility perceptions, no statistically significant relationship was found between risk and gender for specific scenarios. Further analysis was done to ascertain whether there was any gender-based difference in risk perception based on the origin of the task (imposed or self-generated). In Table 5.62 pupils' mean risk perception was calculated according to whether the origin of the information need was imposed or self-generated. The range of

options was 1-3, with 3 being serious risk and 1 low, hence mean scores will also fall in this range.

	Origin of need	
	Imposed	Self-generated
Male	2.35	2.11
Female	2.43	2.36

Table 5.62 Risk perception grouped by origin of need across genders

From Table 5.62 it is evident that the gender difference is less for imposed tasks (0.08) than for self-generated tasks (0.25). A t-test to compare the means was conducted on the raw risk perception data and it confirms this. The difference between the means for imposed tasks is not statistically significant (one tail t-value = 0.0195, df =1199, p=0.4922); however, the difference for self-generate tasks is statistically significant (one tail t-value = 5.2011, df = 1186, p<0.0001).

The data thus confirms Slovic's (1999) mention of the possibility of gender as having an effect on risk perception and its effect is seen with respect to the origin of the information need (imposed/self-generated).

5.5.3 Effect of where background knowledge was gained on credibility perceptions

In order to ascertain whether pupils' passive accumulation of knowledge over time affects their perceptions of information channel credibility, pupils were asked to rank where they had obtained their background knowledge on the different information types in the past. Table 5.63 shows the number of pupils who chose a particular channel as most important for gaining background knowledge (as well as this number as a percentage of all pupils for that type of information). For ease of comparison the columns of the table are sorted from left to right, based on the total number of pupils choosing each information channel.

Information type	Television	Internet	Newspapers	Teachers	Magazines	Friends	Family	Books	Brochures	Experts
Reference N=425	41 (10%)	210 (49%)	7 (2%)	108 (25%)	5 (1%)	5 (1%)	17 (4%)	20 (5%)	4 (1%)	8 (2%)
Commercial N=429	136 (32%)	74 (17%)	63 (15%)	0 (0%)	59 (14%)	19 (4%)	30 (7%)	15 (3%)	23 (5%)	10 (2%)
Leisure N=427	258 (60%)	87 (20%)	12 (3%)	6 (1%)	17 (4%)	33 (8%)	8 (2%)	3 (1%)	1 (0%)	2 (0%)
Current affairs N=428	229 (54%)	69 (16%)	56 (13%)	6 (1%)	4 (1%)	36 (8%)	19 (4%)	4 (1%)	1 (0%)	4 (1%)
Total for each channel N=1709	664 (39%)	440 (26%)	138 (8%)	120 (7%)	85 (5%)	93 (5%)	74 (4%)	42 (2%)	29 (2%)	24 (1%)

Table 5.63 Numbers and percentages of where pupils gained their background knowledge on each information type

For **reference** information pupils predominantly get their background knowledge from the internet. Teachers and television follow as second and third choice. Pupils' background knowledge for **commercial** information comes predominantly from television, the internet and newspapers. Pupils predominantly get their background knowledge on **leisure** information from television, the internet and friends. Pupils get their background knowledge on **current affairs** from television, followed by the internet and newspapers.

Overall the pupils' background knowledge came from television, the internet and newspapers. Experts, brochures and books are the least important information channels for background knowledge. The value of this table is that it indicates that the pupils gain background knowledge from different information channels, depending on the type of information.

5.5.4 Effect of internet usage on credibility perceptions

One of the characteristics of this study is that in spite of it only covering one city, the pupils surveyed came from a broad range of socio-economic backgrounds. This survey covered pupils who had no internet exposure (46 pupils) through to those who made high use of the internet. The upper quartile of 131 pupils used the internet over 18 hours

a week. This affords an opportunity to evaluate the effect of internet usage on other factors, such as information credibility perceptions.

Internet usage ranged from 0 hours per week to 142 hours[29], with a mean of 15 hours. An Ofcom (2015) survey of British children (12-15 years old) found an average of 18.9 hours a week and 16-24-year olds spent 27 hours per week on the internet. For the purposes of this study internet usage was simply used as a measure to rank pupils from those unexposed to the internet to those who use the internet very often. The male mean was 14 hours per week while the female mean was 16. There was also an age-based difference with the 13/14-year olds having a mean of 10 hours while the 17/18-year olds had a mean of 19 hours. In Section 5.3.3.3 the spread of internet usage is illustrated showing that the bulk of pupils use the internet between 1 and 10 hours a week.

Categorising of internet exposure into high and low is obviously a relative measure and thus the way this was done here was to take upper and lower quartiles. If one splits the pupils into approximate quartiles (i.e. ranking the participants and splitting them into four groups of approximately the same number of pupils), the ranges are 0-2 hours (165 pupils), 3-7 hours (135 pupils), 8-18 hours (117 pupils) and over 18 hours (131 pupils). Each range encompasses approximately one quarter of the pupils. (One cannot get perfect quartile ranges with discrete values.) Table 5.64 shows the numbers of pupils in each range.

	Hours	Number of pupils (N=548)
Quartile 1	From 0 to 2 hours	165 (30%)
Quartile 2	From 3 to 7 hours	135 (25%)
Quartile 3	From 8 to 18 hours	117 (21%)
Quartile 4	Over 18 hours	131 (24%)

Table 5.64 Internet usage quartiles

These quartiles were then used to ascertain whether internet usage affects information channel credibility perceptions. In order to isolate the effect of internet usage, only the top quartile and the bottom quartile were used. This is portrayed in Table 5.65. Another grouping of interest is those pupils recording zero usage of the internet; this is also shown in Table 5.65 and analysis of this is included here. (Note: the pupils recording no

[29] The internet usage figures were estimated by the pupils themselves and even though some of the hours appear improbably high the data analysis method of using the upper quartile removes the effect of the actual size of the estimation.

internet usage are of necessity also part of the lower quartile.) There were 296 participants in the upper and lower quartiles but in Table 5.65 the N value is 1 390. The reason for this is that all pupils had the opportunity to make a selection of their most credible information channel in each of eight scenarios, hence the increased N value. The table shows the number of pupils rating each channel as their most credible information channel.

N=1390	Internet	Books	Brochures	Magazines	Newspapers	Television	Friends	Family	Teachers	Experts
High internet usage (Upper quartile: +18 hours)	305 (50%)	23 (4%)	34 (6%)	18 (3%)	35 (6%)	55 (9%)	25 (4%)	26 (4%)	30 (5%)	54 (9%)
Low internet usage (Lower quartile: 0-2 hours)	305 (39%)	53 (7%)	35 (4%)	31 (4%)	40 (5%)	139 (18%)	31 (4%)	55 (7%)	55 (7%)	41 (5%)
No internet usage	67 (32%)	4 (2%)	9 (4%)	13 (6%)	9 (4%)	42 (20%)	11 (5%)	19 (9%)	19 (9%)	17 (8%)

Table 5.65 Comparison of information channel credibility perception by internet exposure

A number of observations can be made from Table 5.65. In spite of one group not using the internet (0 hours per week), 32% of these pupils chose the internet as the most credible information channel. The high internet users' choice of most credible information channel is the internet (50%, 305/605), but while the lower quartile of internet users still predominantly choose the internet (39%, 305/785), there is a greater spread of choices across other channels. The second most popular choice for both the lower quartile of internet usage and those not using the internet is television.

Table 5.65 shows dominance of the internet over the other information channels and thus it is useful to revert to the original set of information channels proposed in the context matrix in Figure 3.7 before they were expanded to the 10 information channels used in the collection of data and analysis of findings. Figure 3.7 focused on the internet, print, mass media and interpersonal information channels.

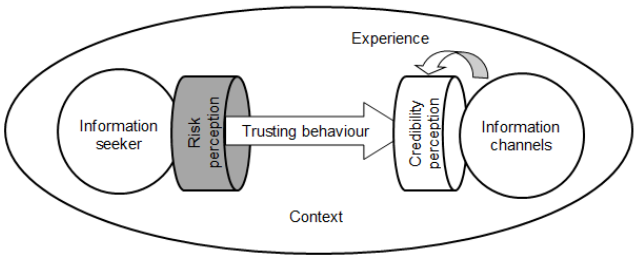
N=1390	Internet	Print	Mass media	Interpersonal
High internet usage (Upper quartile: +18 hours)	305 (50%)	75 (12%)	90 (15%)	132 (22%)
Low internet usage (Lower quartile: 0-2 hours)	305 (39%)	119 (15%)	179 (23%)	182 (23%)
No internet usage	67 (32%)	26 (12%)	51 (24%)	66 (31%)

Table 5.66 Comparison of grouped information channel credibility perception by internet exposure

Noteworthy is that the pupils who do not use the internet show a higher percentage choice of interpersonal channels (31%, 66/210) than do the upper quartile of internet users (22%, 132/605).

Because of the dominance of pupils' choice of the internet, this afforded the researcher the opportunity to use it as a basis on which to conduct decision tree analysis on factors influencing pupils' credibility perceptions. This is reported in Sections 5.4.1.1 to 5.4.1.8. Of note for this section is how weekly internet usage features in the profiles of pupils choosing the internet in many of the scenarios.

5.6 RISK PERCEPTION



For each scenario the pupils recorded their perception of the risk associated with selecting incorrect information. Their risk perceptions were marked on a continuum (as shown in Figure 4.5) from low risk to serious risk, but for the purpose of recording, they were grouped into low, medium and serious risk perception and allocated a value of 1, 2 and 3, as illustrated in Figure 5.13.

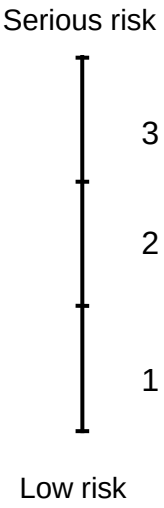


Figure 5.13 Risk perception continuum recording template

Detailed data for risk perception in each scenario was presented in Sections 5.4.1.1 to 5.4.1.8. In those sections results of Pearson's chi-squared tests were also discussed. In Scenarios 1 (buying a cell phone), 3 (municipal election information), 4 (English essay on movies), 6 (cell phone rates for a Mathematics exercise), 7 (entering a talent show) and 8 (history of political parties for school project) it was found that the influence of risk on pupils' perception of information channels' credibility was statistically significant.[30] In each of the scenarios listed above the higher the risk, the greater the tendency for pupils to find the internet more credible (see Table 5.15, Table 5.26, Table 5.34, Table 5.44 Table 5.49 and Table 5.54). The exception to these is Scenario 6 (Table 5.44, researching cell phone rates) where pupils who perceived the risk of using incorrect information to be serious (risk = 3) chose the internet less often than those perceiving the risk to be low (risk = 1) (chi-squared value = 7.814, df =2, p=0.0201).

Table 5.67 draws together the mean risk perception presented in Sections 5.4.1.1 to 5.4.1.8 so as to facilitate comparison. Scenarios are then sorted on this risk perception from left to right, with the lowest on the left, i.e. the scenarios perceived by the pupils to carry least risk of getting incorrect information on the left.

[30] Chi-squared tests focused on pupils' choice of the internet because this was the choice with the greatest number of respondents. There is no reason to believe other channels would give different results, but reduced numbers would make analysis less reliable.

	3 Municipal political party policies	7 Television talent show	6 Cell phone rates	8 Political party history	1 Buying cell phone	4 Movie	2 AIDS	5 Tuberculosis
Origin of need	Self-generated	Self-generated	Imposed	Imposed	Self-generated	Imposed	Imposed	Self-generated
Type of information	Current affairs	Leisure	Commercial	Current affairs	Commercial	Leisure	Reference	Reference
Mean risk perception[31]	1.97	2.03	2.23	2.31	2 .34	2.37	2.61	2.65

Table 5.67 Risk perception for all scenarios

Table 5.67 shows the risk perception in an undifferentiated spread of self-generated and imposed tasks across each of the information types. This information will be grouped below to highlight the effect of each of these factors on risk perception.

In Table 5.68 the mean of these risk perceptions is calculated according to whether the task in the scenario was imposed or self-generated. These are pupils' mean risk perceptions calculated from values recorded by pupils for each scenario and thus the entries in the table have a range from 1 to 3, with the former being low perceived risk and the latter high perceived risk.

	Self-generated	Imposed	All scenarios
Mean risk perception	2.26	2.40	2.33

Table 5.68 Risk perception for all scenarios based on a grouping by origin of information need

[31] In order to get a quantitative measure of risk perception, low risk perception was given a value of 1, medium a value of 2 and serious a value of 3. These were added up and a mean was calculated.

Even though from Table 5.68 it can be seen that imposed tasks are perceived by the pupils to have a greater risk than self-generated tasks, the difference is not statistically significant (one tail t-value = 0.9776, df = 2387, p=0.1641). The value of these observations for school-based interventions is that pupils perceive an inherent level of risk associated with a task set by the teacher and this can be responsibly exploited to guide pupils to good information practices (discussed in more detail in Section 6.3).

In Table 5.69 the risk perceptions were grouped according to the information types, reference, commercial, leisure and current affairs. These were then sorted from left to right, with information types with the least perceived risk on the left and those with the greatest perceived risk on the right.

	Current Affairs	Leisure	Commercial	Reference	All scenarios
Mean risk perception	2.13	2.22	2.30	2.63	2.33

Table 5.69 Risk perception for all information types

The relatively low perceived risk recorded by pupils for current affairs is possibly a reflection of the pupils not being particularly interested in politics. In fact, a number of them made this unsolicited comment on the questionnaire. The highest perceived risk was for the reference information (tuberculosis and AIDS). Further studies could try to ascertain the influence of a topic on pupils' risk perception.

If the mean risk perceptions from Tables 5.73 and 5.74 are now combined into a table cross-referencing types of information and whether the information need was imposed or self-generated, new trends can be found. Table 5.70 does not introduce any new numbers, but merely regroups those from Table 5.68 and Table 5.69. The table is sorted from left to right on the column average, with the lowest perceived risk on the left and the highest on the right.

	Current	Leisure	Commercial	Reference	Total mean
Self-generated	1.97	2.03	2.34	2.65	2.26
Imposed	2.31	2.37	2.23	2.61	2.40
Total mean	2.13	2.22	2.30	2.63	2.33

Table 5.70 Risk perception by origin of task across information types

Applying a chi-squared test does not indicate any significant independence of the self-generated tasks and imposed tasks either. Pupils' risk perceptions are thus influenced by a **combination** of the scenario, type of information and whether the task was imposed (e.g. initiated by the teacher) or chosen by themselves.

In Section 5.5.2 the effect of risk was discussed as it relates to gender. It was found that in every category boys perceived the risk to be lower than girls did. However, it was also noted that the smallest difference was in imposed school tasks, indicating that pupils do respond to pressure imposed by teachers.

Up to now risk perception has been discussed in its own right rather than taking into account its effect on credibility perceptions. Table 5.71 will now portray an analysis of the effect of risk on pupils' credibility perceptions. The way this was calculated was to count how many pupils chose each channel as most credible **and** who recorded their risk perception of the consequence of using incorrect information as serious (risk = 3). This was then also done for pupils rating the risk perception as low (risk = 1). Each count on its own is relative so percentages were calculated to facilitate comparison.

	Internet	Books	Brochures	Magazines	Newspaper	Television	Friends	Family	Teachers	Experts	Total
Risk 1	151 (32%)	30 (6%)	27 (6%)	15 (3%)	36 (8%)	96 (20%)	22 (5%)	25 (5%)	25 (5%)	43 (9%)	470 (100%)
Risk 3	618 (51%)	59 (5%)	68 (6%)	29 (2%)	35 (3%)	114 (9%)	25 (2%)	54 (4%)	85 (7%)	114 (9%)	1201 (100%)

Table 5.71 Comparison of credibility perceptions according to risk perception

Thus for scenarios that the pupils consider to be a serious risk (risk = 3), they find the internet to be the most credible channel (51%, 618/1201). However, when their perception of risk is low (risk = 1) there is less focus on the internet (32%, 151/470) and television is also perceived as credible more often (20%, 96/470). These observations are supported by the chi-squared tests referred to in Sections 5.4.1.1 to 5.4.1.8, where it was found that when the perceived risk was greater, the pupils chose the internet, with the exception of finding cell phone rates where this tendency was reversed.

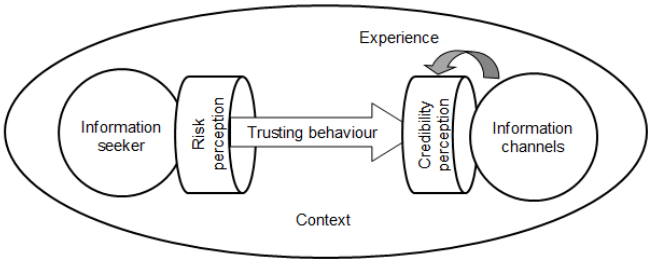
Worth noting is the relationship of risk perception with a pupil's past experience of an information need. Table 5.72 shows the pupils' risk perception of each scenario according to whether they have in the past had experience of the information need or not.

Scenario	1. Cell phone purchase	2. AIDS project	3. Municipal politics	4. Movie essay	5. TB concern	6. Cell phone rates	7. Talent show	8. Political project	Overall risk perception
Experience of this information need	2.41	2.66	2.15	2.44	2.69	2.40	2.24	2.44	2.43
No experience of this information need	2.20	2.18	1.86	2.02	2.53	2.09	1.89	2.15	2.11

Table 5.72 Risk perception according to experience of the information need

The table shows that in every scenario, pupils who have had experience of an information need perceive the risk to be significantly more serious than pupils who have not experienced the need in the past (one tail t-value =3.1816, df = 14, p =0.00333).

5.7 EXPERIENCE AS A FEEDBACK LOOP



The information credibility model makes provision for experience in the form of a feedback loop. This would imply that pupils might have different credibility perceptions depending on whether they have experience of a particular information need as described in each scenario or not. In this study experience will be considered from two perspectives: whether the pupil has had

experience of a particular information need and also looking from the perspective of where they gained their background knowledge (i.e. using this information channel for a similar need in the past). The way to measure experience of a particular information need in the survey was framed in the questionnaire as: “Have you ever had to find information about buying a cell phone before?”, “Have you ever had to find information about AIDS before?” etc. Background knowledge was measured by asking pupils to indicate “the source where you have, in the past, learned most of your information about that information type” (see Appendix A).

Already in Section 5.6 an aspect of experience has been discussed as it relates to risk perception.

5.7.1 Data on information channels through which pupils gained background knowledge

A number of studies mention the role of passive/undirected/serendipitous/encountering of information (Agusta, 2010; Courtright, 2007; Erdelez, 1997; Fischer *et al*. 2005; Makri & Blandford, 2012; Savolainen, 1995; Wilson, 1997,1999). This section will use the channels through which pupils gained their background knowledge to ascertain the relationship to pupils’ perceptions of information channel credibility. Table 5.63 (in Section 5.5.3) shows the number (and percentage) of pupils who chose each information channel as the location where they gained their background knowledge for each of the types of information used in the survey. It was found that the main channels used for background knowledge were television, internet and newspapers. The least important channels were experts, brochures and books. The low ranking of books does not support Howard’s (2011) finding on the importance of reading for pleasure as a source of background knowledge.

Yang, Aloe and Feeley (2014) find that existing knowledge is a good predictor of information choices. Thus if people gained background knowledge in the past from a particular information channel, then one would expect them to have a tendency to trust that same information channel when in search of new information. In order to compare information channels from which they obtained background knowledge with information channels they perceive as most credible, the percentage of each is calculated and shown in Table 5.73.

		Internet	Books	Brochures	Magazines	Newspaper	Television	Friends	Family	Teachers	Experts
Reference	Background	49%	5%	1%	1%	2%	10%	1%	4%	25%	2%
	Credibility	59%	5%	2%	1%	2%	4%	2%	5%	10%	10%
Commercial	Background	17%	3%	5%	14%	15%	32%	4%	7%	0%	2%
	Credibility	35%	4%	12%	7%	3%	13%	6%	4%	6%	10%
Leisure	Background	20%	1%	0%	4%	3%	60%	8%	2%	1%	0%
	Credibility	47%	7%	3%	4%	2%	23%	4%	2%	5%	5%
Current affairs	Background	16%	1%	0%	1%	13%	54%	8%	4%	1%	1%
	Credibility	40%	5%	2%	2%	12%	16%	2%	8%	7%	5%

Table 5.73 Comparison of background knowledge and credibility

Noteworthy discrepancies for individual information channels are that, for each of the types of information, the percentage of pupils choosing the internet as their most credible information channel is higher than the percentage of pupils choosing the internet as the information channel through which they learned most in the past (one tail t-value =2.03864, df = 6, p =0.04380). The opposite trend is noted for television. The percentage of pupils choosing television as their most credible information channel is lower than the percentage of pupils choosing television as the information channel through which they learned most in the past (one tail t-value =2.04047, df = 6, p =0.04369).

Thus, on the whole background knowledge appears to be a predictor of pupils' information channel credibility perceptions, confirming Yang, Aloe and Feeley's (2014) observation of the relationship between current knowledge and information choices. The discrepancies are worthy of further attention.

5.7.2 Effect of previous experience of an information need on credibility perceptions

Whether a pupil has experience of a particular information need or not could influence their perception of information channel credibility (Chatman, 1996; Ramchurn *et al.,* 2004). This component of the feedback loop might be useful when considering school-based interventions to guide pupils' assessments of information credibility.

Table 5.74 shows the percentage of pupils with previous experience in each of the scenarios.

Scenario	1. Cell phone purchase	2. AIDS project	3. Municipal politics	4. Movie essay	5. TB concern	6. Cell phone rates	7. Talent show	8. Political project
	N=410	N=394	N=390	N=388	N=392	N=383	N=383	N=374
Percentage recording previous experience of this information need	78%	93%	35%	76%	64%	38%	38%	45%

Table 5.74 Percentage of pupils with experience of the scenarios

The greatest percentage of pupils with experience of a particular information need is for those doing AIDS research and the lowest for those examining municipal politics. The overall average of all percentages in the table indicates that across all pupils and all scenarios there were only 63% records of previous experience of the information needs even though they were specifically designed to be the sort of information needs typically encountered by high school pupils.

Table 5.75 looks at the effect of experience on pupils' credibility perceptions. The pupils choosing each information channel as most credible were counted for each scenario. These numbers were then split between pupils who had experience of that particular information need in the past and those who had not, calculated as a percentage to enable easier comparisons and shown in Table 5.75.

Scenario		Internet	Books	Brochures	Magazines	Newspaper	Television	Friends	Family	Teachers	Experts
1. Cell phone purchase	Experienced	37%	2%	15%	7%	3%	11%	7%	4%	0%	12%
	Not experienced	34%	2%	14%	12%	5%	17%	5%	8%	2%	3%
2. AIDS project	Experienced	65%	5%	3%	1%	2%	3%	0%	3%	10%	9%
	Not experienced	61%	4%	0%	0%	2%	2%	1%	7%	12%	10%
3. Municipal politics	Experienced	29%	2%	2%	0%	17%	22%	2%	13%	4%	7%
	Not experienced	20%	2%	0%	3%	20%	33%	0%	12%	8%	3%
4. Movie essay	Experienced	53%	13%	1%	2%	0%	19%	2%	1%	8%	2%
	Not experienced	52%	3%	0%	4%	1%	33%	0%	1%	5%	0%
5. TB concern	Experienced	56%	4%	1%	1%	1%	5%	2%	6%	10%	14%
	Not experienced	56%	10%	3%	0%	1%	4%	4%	10%	4%	8%
6. Cell phone rates	Experienced	36%	4%	13%	3%	4%	8%	4%	3%	12%	13%
	Not experienced	37%	7%	12%	9%	1%	12%	1%	6%	7%	6%
7. Talent show	Experienced	37%	2%	6%	4%	3%	26%	8%	0%	2%	12%
	Not experienced	30%	3%	3%	6%	3%	39%	4%	8%	0%	4%
8. Political project	Experienced	56%	11%	3%	1%	6%	8%	1%	4%	5%	6%
	Not experienced	56%	8%	2%	2%	6%	6%	3%	2%	11%	6%
Total	Experienced	47%	5%	6%	3%	4%	12%	3%	4%	6%	9%
	Not experienced	44%	5%	4%	4%	5%	18%	2%	7%	6%	5%

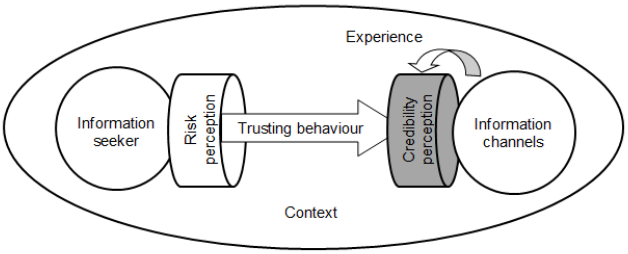
Table 5.75 Comparison of information channel choice as most credibility with previous experience of the information need

Looking at the row indicating totals, the two noteworthy differences between pupils who have previously experienced a particular information need and pupils who have not experienced it are between the internet and television. A higher percentage of pupils who have experienced an information need in the past than inexperienced pupils perceive the internet as the most credible information channel. The opposite is true of television. More pupils who have not experienced a particular information need perceive

television as more credible than pupils who have experienced this need. Neither of these differences in the means is statistically significant though (Internet: one tail t-value =0.40639, df = 14, p =0.34530. Television: one tail t-value =0.95696, df = 14, p =0.17741). Focusing on specific scenarios, the Pearson chi-squared test shows that in Scenario 3 (municipal politics) experience has a significant effect on the credibility perception of the internet (chi-squared value = 4.970, df =2, p=0.0286). Another measure of association between experience and perception of information channel credibility is shown in the decision trees referred to in Sections 5.4.1.1 to 5.4.1.8. Of significance for this section is how pupils' previous experience of an information need features in the profiles of pupils choosing the internet in Scenarios 2 (AIDS research), 3 (municipal politics) and 8 (political project) as discussed in Sections 5.4.2, 5.4.3, and 5.4.8. Thus whether a pupil has experience of a particular information need or not does have an effect on their perceptions of information channel credibility.

For completeness, it should be noted that in Section 5.6 (risk perception) it was seen that in every scenario, pupils who have had experience of an information need perceive the risk to be significantly more serious than pupils who have not experienced the need in the past (one tail t-value =3.1816, df = 14, p =0.00333).

5.8 REASONS FOR CREDIBILITY CHOICES



In the questionnaire, the pupils were asked to give a reason for their choice of most credible information channel for each scenario. The options from which they were to choose were based on the discussion of reasons for trust summarised in Table 2.2. Results are presented and discussed according to scenarios in Sections 5.4.1.1 to 5.4.1.8, but in Table 5.76 (below) the reasons are grouped according to the information channel.

	You trust the person	Trust information from this channel	Past experience	Has what you want	Total
Internet	137 (13%)	399 (37%)	309 (29%)	235 (22%)	1080
Books	34 (26%)	51 (39%)	23 (18%)	23 (18%)	131
Brochure	13 (11%)	47 (40%)	31 (26%)	26 (22%)	117
Magazine	11 (15%)	30 (42%)	14 (19%)	17 (24%)	72
Newspaper	18 (16%)	40 (36%)	21 (19%)	32 (29%)	111
Television	56 (17%)	117 (36%)	77 (24%)	76 (23%)	326
Friends	22 (29%)	18 (24%)	21 (28%)	14 (19%)	75
Family	41 (39%)	31 (29%)	18 (17%)	16 (15%)	106
Teacher	64 (44%)	40 (27%)	21 (14%)	22 (15%)	147
Expert	63 (32%)	62 (32%)	38 (19%)	32 (16%)	195
Total	459 (19%)	835 (35%)	573 (24%)	493 (21%)	2360

Table 5.76 Reasons for choice of information channels as most credible

While there is a spread of reasons given, a trend can be observed from the table. Pupils' reasons for finding the internet, books, brochures, magazines, newspapers and television credible is that they trust information from these information channels. However, their choice of friends, family, teachers and experts as most credible is because of their trust of the person.

5.8.1 Additional reasons for choice of most credible information channel

Options given to the pupils from which to choose a reason for the most credible information channel were that they:

- Trusted the person
- Trusted information from this channel
- Had good experience in the past

- Found that it had what they wanted.

However, they were also given the opportunity to record an alternative reason, should none of the above be relevant. These reasons are listed in Appendix H. In this appendix they are grouped according to scenario and information channel (Table H.1) and then a qualitative thematic analysis according to guidelines by Ayres (2008) is done of the reasons (Table H.2).

The qualitative thematic approach provides additional insight relevant to this discussion. The themes identified were

- The information channel itself is credible. This is a different slant to the option provided in the questionnaire of the **information** being credible.
- The **quantity** of information and the convenience of getting it is satisfactory. When compiling the questionnaire this was not considered to be one of the criteria for indicating information channel credibility.
- The people behind the information were perceived to be knowledgeable. This is a rewording of one of the options provided.
- Previous usage gave them confidence. This is a rewording of one of the options provided.

Some of the comments were very difficult to interpret. Grammar and spelling have been left unadjusted.

Of the 95 reasons listed,

- Thirty-one reasons fell in the category of pupils seeing the information channel itself as credible. This perception was particularly prevalent for the internet (15) and television (9).
- Fourteen reasons fell in the category of pupils saying that the quantity and ease of access influenced their perception of credibility.
- Twenty-eight perceived the credibility of the people behind the information to be important in their choice of most credible channel. This is understandable for the interpersonal channels - friends, family, teachers and experts (16) - but it is surprising that the same reasons were given for the internet (9), since the person behind information on the internet is not easily known.
- Eighteen reasons were not categorisable into the identified themes, and were too unique to note on their own. Some of these, where applicable, will be discussed in the analysis to follow.

What follows is a closer individual look at some of the reasons and a discussion of their significance.

- Metacognition. A number of the pupils' reasons could fall under what Bowler (2010b) refers to as metacognition. She describes metacognition as including self-monitoring as well as knowing certain strategies to be successful. Metacognition can be especially important in developing school-based interventions.
  - "Only the best phones are advertised on T.V. (I believe)" is the pupil recognising possible ulterior motives of advertising.
  - "I had to do it for a project" was the reason for choosing the internet as most credible for research on AIDS for a school project. The implication might be that if it had not been a school project the choice might have been different.
  - The value pupils place on interpersonal sources is illustrated by: "Because I can talk to the shops owners."
  - On voting, a pupil's reason that "My family would suffer with me if I chose wrongly" indicates an understanding of the value of a source that indicates accountability for the credibility of information. Similarly, "Product has been reviewed" (cell phone) acknowledges the value of someone else being accountable for the credibility of the information.
  - "I'm not into politics" is a pupil's way of delegating responsibility to newspapers for an area in which they have no interest.
  - One response indicating substantial metacognition was, "Cause[32] I use different sources." Magazines were the least selected channel yet this pupil chose magazines as the most credible channel because of recognising the value of diverse sources.

- Blind trust in advertising sources
  "Only the best phones are advertised on T.V (I believe)"
  This comment indicates an opportunity for schools to encourage metacognition in terms of considering the motives of commercial information sources

- Blind faith in an information channel
  Of concern is the blind faith in the internet: "The internet doesn't lie", "It comes from the internet and most of the things are true". Again this is an opportunity for

[32] Pupils' own words have been retained throughout this section

school-based interventions to promote metacognition and exploration of possible counter-examples to these perceptions.

- Familiarity and personal past experience
  "I had to do it for a project" (i.e. experience of a school project on AIDS).
  The respondent chose the internet as the most credible source for information. It is not clear if this choice has been influenced by the pupil having used the internet as information source for the school project and that familiarity and past experience thus refer to both the topic and the information source. Marsh and Dibben's (2003) model refers to this as "learned trust."

  This might, however, point to opportunities for school interventions to build in experiences with the information available from different information channels for school projects, e.g. the difference between what is available via the internet, what is available via TV, etc.

- Reliance on past experience of others
  The category provided for past experience affecting pupils' perceptions of credibility. However, sometimes pupils would rely on the past experience of other people rather than their own. Family members were perceived as credible because "They know about which parties serve well" and "They have voted before." Similarly experts were trusted "Because experts know what they are talking about" and "Know more cause they are trained (doctors & nurses)."

- Value of face-to-face synchronous interaction (e.g. interpersonal talks)
  "Because I can talk to the shops owners."

- Recognition of broader social responsibilities
  "My family would suffer with me if I chose wrongly."

- Acknowledgment of the value of reviewers who are held accountable
  "Product has been reviewed" (cell phone)

- Reliance on expertise
  "Because experts know what they are talking about"; "Know more cause they are trained (doctors & nurses)."

- Lack of interest in topic and apathy toward social responsibility.
  "I'm not into politics", "I don't really care", "For some reason I don't really care about politics."

  These examples can also be interpreted as implied delegation of responsibility to public and mass media to form and shape opinion on issues of social and citizen interest, such as politics. The particular respondent chose newspapers as the most credible information source for this information need.

- Preference for diversity in information channels
  "Cause I use different sources."

- Reliance on experiences/expertise of others (Case *et al.'s* (2004) two-step information seeking), e.g. the experience of family members or friends.
  "They know about which parties serve well"; "*They have voted before*."

- Differentiation between information source and information channel
  An interesting perception of the internet's credibility is that "They get information from the source itself and just quote it." This pupil understands the concept of the source being different from the channel through which the information is being accessed and is expressing his/her confidence in the source by rating the channel as credible.

- Risk perception
  "So you won't be embarrassed" is the reason for choosing the internet as the most credible channel for information on entering a television talent show. This pupil is articulating the effect of risk perception. Embarrassment in front of peers is a high price to pay for incorrect information.

Sometimes pupils' reasons are the opposite of those provided. "I haven't used it before" was strangely the reason given for choosing the internet as the most credible channel and "I don't trust any of this" as the reason for choosing television. "Because they sometimes tell you the truth" was given as a reason for finding television the most credible channel.

Ironically convenience is often cited by pupils as the underlying reason for perceiving a channel as credible: "Any question has an answer in this source", "Questions can easily

be found “, “It is the only source which has relevant info “and “This source has useful info about movies.” Quantity of information is also cited by pupils as a reason for the channel being credible: “Because some books give you more infor”, “Because it has a lot of information” and “you get anything from the internet”.

5.9 CONCLUSION

This chapter reported on the survey findings. It began by describing how the survey was conducted and the participating schools’ details. The structure of the chapter then followed the components of the information channel credibility model, namely the person in context, the information in context, the pupil as trustor, risk perception and the feedback loop.

The context of the pupils at macro-level was a city in the Mpumalanga province of South Africa. On a meso-level the three schools ranged from one catering for affluent families to a non-fee-paying school on the other end of the scale, catering for pupils from very poor families. On a micro-level the pupils’ weekly internet usage was used as an indication of their exposure to technology. The weekly internet usage ranged from 142 hours to a group who did not use the internet at all, with the bulk between 1 and 10 hours. The few pupils recording very high number of hours were addressed in Section 5.5.4, where it was explained to be the result of cell phone internet activity being included. The use of quartiles in the descriptive statistics negated any undue effect of very high values.

Table 5.77 summarises the main findings of this study by triangulating subject literature, descriptive statistics and inferential statistics findings from decision tree analysis and chi-squared tests.

Finding	Literature	Descriptive	Decision tree	Chi-squared
Internet is perceived as most credible information channel in all contexts	Case *et al.* (2004); Gray *et al.* (2005); Metzger & Flanagin, 2013	Table 5.55	Not the focus of this analysis	Not the focus of these tests
Perception of serious risk increases likelihood of choosing the internet		Table 5.71	Scenario 4 and 8	Scenario 1; 3; 4; 7 and 8 Scenario 6 is opposite finding
Previous experience of an information need increases likelihood of choosing the internet		Table 5.75	Scenario 3 and 8	Scenario 3 and 4
Choice of an information channel in one context increases likelihood of similar choice in similar context	Marsh & Dibben (2003); Savolainen & Kari (2004)		Scenario 1; 3; 5 and 7	Scenario 1 to 5
Grade 12s choose the internet as most credible while grade 8s prefer television		Table 5.59 gives parallel result for age	Scenario 2; 3 and 4	Scenario 2; 3; 4 and 5
Pupils perceive imposed tasks to have greater risk than self-generated ones		Table 5.68	Not the focus of this analysis	Not the focus of these tests
Pupils have different perceptions of information channel credibility depending on the type of information they need	Duffy, Liying & Ong (2010) but Lu & Yuan (2010) found the opposite	Table 5.58	Not the focus of this analysis	Not the focus of these tests
Background knowledge gained predominantly from television but internet perceived as most credible		Table 5.73	Not the focus of this analysis	Not the focus of these tests
Higher internet usage levels decrease perceived credibility of interpersonal channels		Table 5.66	Not the focus of this analysis	Not the focus of these tests
Boys perceive the risk to be lower than girls	Slovic (1999)	Table 5.61	Not the focus of this analysis	Not the focus of these tests

Table 5.77 Triangulation of main findings

The context of the information was covered by first documenting responses for each of the scenarios and then noting the effect on credibility perceptions of whether the tasks were imposed or self-generated, as well as the effect of the type of information needed. Across all contexts pupils perceive the internet to be the most credible information channel. Information channel credibility perceptions varied considerably for the different scenarios. For imposed tasks (school projects), pupils' credibility perceptions appear to

be influenced by what teachers would approve of. Pupils' information channel credibility perceptions varied considerably depending on the type of information needed.

The effect of age, gender, background knowledge and internet usage on information credibility perceptions was then investigated. A higher percentage of older pupils found the internet most credible, while a higher percentage of younger pupils perceived television to be most credible. Gender was found to have an effect on risk perception and influenced pupils' perceptions of imposed and self-generated tasks. Pupils' background knowledge came predominantly from television, internet and newspapers. Pupils with no weekly internet usage ranked interpersonal information channels (friends, family, teachers, experts) more highly than did the pupils in the lower or upper quartile of weekly internet usage.

When pupils perceive a scenario to pose a serious risk (risk = 3), they favour the internet as most credible information channel, but if the risk is low (risk = 1) the focus is less on the internet and television is also perceived by many pupils to be the most credible information channel from which to get their information.

If pupils have had experience of a particular information need, they value the credibility of the internet. A higher proportion of inexperienced pupils perceive television to have greater credibility.

The next chapter will discuss how the findings could inform possible school-based interventions in order to get pupils' perceptions to approximate those of adults working in information-intensive professions more closely.

CHAPTER 6

DISCUSSION OF FINDINGS AND APPLICATION TO SCHOOL-BASED INTERVENTIONS

6.1 INTRODUCTION

In Chapter 5 empirical findings from the survey were presented. These findings will now be discussed in relation to findings noted in the literature analysis in Chapters 2 and 3. The findings will be triangulated before discussing the relation between the findings and the information channel credibility model. The value of the model in directing the study will be assessed and recommendations will be made on how it can direct school-based interventions and further studies based on the findings on pupils' information channel credibility perceptions.

6.2 TRIANGULATION AND DISCUSSION OF FINDINGS

The information channel credibility model presented in Figure 4.3 directed the study. Throughout the presentation of empirical findings a summarised model was used showing the key elements. This study is based on two types of findings: (1) findings from the subject literature as presented in Chapters 2 and 3 and (2) findings from the empirical component as presented in Chapter 5. The latter covers mostly quantitative, but also limited qualitative data. The triangulation of findings is often used by researchers to limit measurement biases. Data analysis using triangulation works on the premise that a topic can be understood better by analysing it from different perspectives (Rothbauer, 2008). The aspect of triangulation used in this study is triangulation of method, which entails the use of qualitative and quantitative data to analyse pupils' perceptions of information channel credibility. Similarly, triangulation of source is covered by using literature findings to corroborate or challenge the empirical findings. The numerous perspectives from which this study is triangulated are illustrated in Figure 6.1.

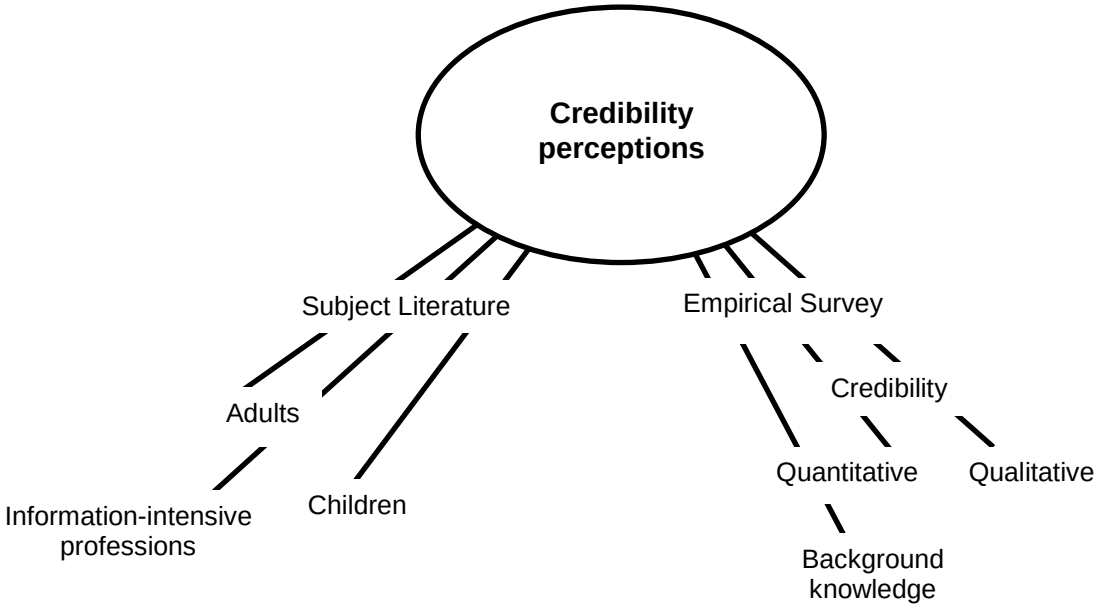
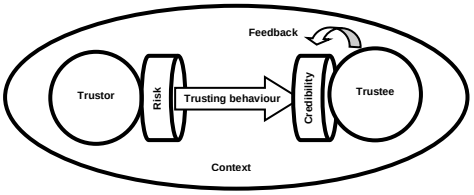


Figure 6.1 Illustration of findings triangulation

Findings are analysed from two basic perspectives, namely from the subject literature and the empirical survey. Each of these in turn has sub-perspectives, which enrich the analysis. The subject literature covered both adults (briefly) and children, while the adults were further categorised, with information-intensive professions having a special perspective. Empirical survey findings covered where pupils obtained their background knowledge as well as their credibility perceptions. A further differentiation is whether the data was quantitative or qualitative. As illustrated in Figure 6.1, quantitative data covered both background knowledge and credibility perceptions, while credibility perceptions yielded both qualitative and quantitative findings.

6.3 A HOLISTIC VIEW OF RECOGNISING INTER-RELATED COMPLEXITY



The information credibility model (Figure 4.3 summarised here) identified various components affecting pupils' perceptions of information channel credibility. Each of these will be discussed using the triangulation angles covered in Figure 6.1. The findings (from subject literature and empirical study) show multifaceted inter-relatedness between all the components of the model. The structure of the discussion followed below will focus on specific components individually in order to identify characteristics that will later be synthesised to understand relationships between them.

6.3.1 Context and perceptions of information channel credibility

As explained in Chapter 3, context encompasses the context of the pupil and also the context of the information seeking. This section will report findings from the empirical component as triangulated with findings reported in the subject literature.

6.3.1.1 Person in context and perceptions of information credibility

In the subject literature numerous researchers studied people's information needs in rural or urban contexts, information-rich or information-poor societies and work or school or leisure contexts. Pupils generally tend to favour the internet when searching for information (Behrends, 2012; Biddix, Chung & Park, 2011; Herring, 1999; Holtgrafe & Zentes, 2012; Khoo, 2014; Madden, Ford & Miller, 2007; Metzger & Flanagin, 2013; Shenton & Johnson, 2007). Other studies note that pupils favour interpersonal channels (Case, 2012; Shenton & Dixon, 2003; Madden, Ford & Miller, 2007). In Bruce *et al*.'s (2003) study design engineers' choice of information channels for their work context was people. In Cassidy's (2007) study on-line journalists chose on-line information as most reliable. In Chatman's (1996) study information-poor "outsiders" were suspicious of information emanating from outside sources. Meyer (2003) found that rural participants from an oral culture responded positively to presentation of information in a manner corresponding closely to their traditions. Savolainen (1995) found working classes to spend more time on passive absorption of information (television) than professionals who were more active in seeking information in ELIS contexts. Bates *et al.* (2006) found that when the context was a serious health issue, participants focused on the quality of the information rather than where it came from. Older surveys, before the popularity of the internet, rank participants preference as printed media, television, interpersonal, radio and organisations (Connell & Crawford, 1988) or media, doctors, family/friends and organisations (Johnson & Meischke, 1991).

In the empirical survey, the pupils' meso-context was an urban school. On a micro-level pupils came from a broad socio-economic spectrum. The contexts in which the scenarios placed the pupils were typical information needs for teenagers, such as cell phone information, medical questions, political policies and entertainment information. The internet across all contexts (scenarios) was perceived as the most credible information channel. Other channels varied according to context (Table 5.55), which corroborates the variety of findings in the subject literature. Pupils recording low or zero usage of the internet had a much greater incidence of choosing television and interpersonal sources

as their most credible information channel than pupils who had greater internet exposure (Table 5.66). Where pupils obtain their background knowledge is dominated by television, except for reference information, which pupils obtain from the internet and teachers (Table 5.63). Nineteen percent of the reasons recorded by pupils for their choice of most credible information channel were based on their underlying trust of the person behind the information (Table 5.76). This is corroborated by the numerous references in the qualitative data to pupils' trust of people (Tables H.1 and H.2).

The first observation surfacing from this triangulated analysis is of the dominance of the internet being perceived as the most credible information channel in the empirical survey, whereas the subject literature has a more balanced spread of information channels that are perceived as credible. This is a possible topic for further investigation. Is this difference due to the quoted research being dated and should the same research be done now, would there be greater dominance of the internet? Alternatively, could it be that it is an age/scholar effect and that perceptions might change when they leave school and enter the working world? The value ascribed to interpersonal information sources corroborates two possible aspects from the subject literature: the youth of the participants and the information poverty of low-income societies.

Subject literature found working class people mainly obtained information passively (e.g. television). The empirical data shows pupils in general obtained their background knowledge passively from television. Similarly, pupils who did not use the internet relied more on television as the most credible information channel.

Triangulation picks up another possible indirect relationship. "Outsiders" relied on interpersonal information channels. In the empirical findings, low and zero internet users perceived interpersonal channels to be more credible. In this study the socio-economic status of pupils was avoided (for ethical reasons) but it is a possible topic for further study to determine if there is a correlation between internet usage and socio-economic status.

Another possible approach suggested by information channel credibility rankings is the effect of combinations. A person possibly uses the internet to verify information they got from a friend or asks their teacher about something they saw on television.

6.3.1.2 Information need in context and perceptions of information credibility

Typically the context in which an information need occurs is as a self-generated[33] need or an imposed one. For pupils this would generally be an information need of personal interest to themselves or a school task, while for adults an imposed information need would be work-related. This empirical study measured the effect on the pupils' information channel credibility perceptions based on whether the need was imposed or self-generated.

Julien and Michael's (2002) case study found that work-related needs tended to be factual and hence required less time searching for information than personal needs, which tended to be more subjective. Rieh (2002) found participants were more concerned about the quality of information for their own projects than for imposed ones. Gross (1999), however, found that for imposed tasks pupils used more sources than for self-generated tasks. Lee, Ayers and Holden (2014) found pregnant women with high risk conditions used more sources of information than others. Biddix, Chung and Park (2011) found students preferred the internet to libraries.

In this empirical part of the study, for both imposed and self-generated needs the internet and television were chosen most often by pupils as the information channels they perceived as most credible. However, friends were regarded as least credible for imposed school information needs, while books were regarded as least credible for self-generated needs. When pupils were asked for the reason for their choice of most credible information channel, the most prominent reason was that they trusted information from that channel. A relatively higher percentage of pupils perceived teachers as credible for imposed tasks and reference type information (Tables 5.64 and 5.65). Qualitative responses included reference to teachers being "trusted" and the value of their training (Table H.2).

Triangulation of the above reveals corroboration between the findings of the subject literature and empirical findings. Pupils do respond differently to whether the information need is imposed or self-generated – teachers and books are perceived as credible for imposed tasks, but not for self-generated ones. Adults and pupils differ in approach to specific information channels – adults are less particular about imposed tasks while pupils take more care.

[33] In Section 1.8 it was discussed that in this empirical survey the self-generated tasks were in fact simulated.

Another context of information is the type of information being sought. Flanagin and Metzger's (2000) study measured the perceived credibility of newspapers, radio, television, magazines and the internet across different types of information – news, reference, entertainment and commercial. They found that for all types of information newspapers were perceived as significantly more credible than the other channels. In Duffy, Liying and Ong's (2010) study Singapore teenagers' choice of information channel was dependent on the type of information needed. In the context of information-intensive professions (e.g. journalism, law and medicine) information seekers work to codes of ethics, legal structures and self-regulatory boards. However, members of the public seeking medical information have various preferences. In Huston, Jackowski and Kirking's (2009) study participants chose physicians as the most credible source. Case *et al*. (2004) found that participants chose the internet as the most credible source. In Gray *et al.'s study* (2005) adolescents chose the internet because of the control they had over the amount of disclosure.

The empirical findings of this survey are that the information channels perceived by pupils as most credible across all types of information were firstly the internet, followed by television. After that the type of information resulted in differentiation in choice (Table 5.58). For reference information after the internet, interpersonal sources are perceived as the next most credible information channel. For commercial information, printed material is perceived as the next most credible after the internet. For leisure and current affairs information, television and newspapers (mass media) are perceived as the next most credible after the internet. As for where the pupils gain their background knowledge on these types of information, the findings were different. For commercial, leisure and current affairs information pupils predominantly gained their background knowledge from television, while the internet was the primary channel for background knowledge on reference information.

Triangulating the literature findings on types of information with the empirical findings on types on information reveals that the strong preference for the internet is in contrast to Flanagin and Metzger's (2000) findings on the perception of the credibility of newspapers. This study is of school pupils, while Flanagin and Metzger's (2000) sampled adults and was undertaken 15 years ago. This is a possible topic for further investigation. There is thus no one-size-fits-all formula to describe pupils' credibility perceptions, except to observe that across all contexts the internet was perceived as the most credible information channel, which corroborates more recent studies reflecting

changing emphasis on information sources, with much greater focus on online resources (Ek, Eriksson-Backa & Niemelä, 2013; Huvila, 2013; Khoo, 2014).

6.3.2 Information seeker (trustor) and perceptions of information channel credibility

The information seeker comes with particular demographics, prior knowledge and experience, which were discussed under the heading of the person in context (Section 5.5). A number of the characteristics of pupils were found to influence their perception of information channel credibility.

Shenton and Dixon (2003) found the predominant information source used by pupils in their study was other people. Madden, Ford and Miller (2007) found pupils' use of other people as information sources diminishing as they got older; however, Case (2012:232) noted that generally adults preferred getting information from people, which was corroborated by Agosto and Hughes-Hassell (2005), Bruce *et al*. (2003) and Gross and Latham (2009). There thus appears be no consensus in the subject literature on the effect of age on credibility perceptions.

In this empirical study pupils' credibility perceptions were measured for two groups - ages 13/14 and 17/18, corresponding to the typical ages of the two grades surveyed (grade 8 and 12). While for both age groups the internet was perceived as the most credible channel, a higher percentage of the 17/18-year-olds selected the internet than 13/14-year-olds (Table 5.59). Thus the empirical data supports literature findings pointing to a trend towards the internet associated with age. The empirical part of this study found no difference with respect to relational (interpersonal) channels associated with age. Subject literature found working class people mainly obtained information passively (e.g. television). However, the empirical survey found an age-related effect for passive information channels. A greater percentage of younger pupils than older pupils perceive television to be their most credible information channel.

Subject literature did not yield much information on gender differences with regard to credibility perceptions. In the empirical survey, gender did not produce significant differences in credibility perceptions (Table 5.60). The effect of gender on risk perception will be dealt with in Section 6.3.3.

6.3.3 Risk and perceptions of information channel credibility

While previous studies did not appear to focus on the relationship between risk and credibility perception, there was often indirect reference. Flanagin and Metzger (2000) found that for news and reference, information was verified more often than for leisure and commercial purposes. This could point indirectly to a greater perception of risk associated with the former information types. In Duffy, Liying and Ong's (2010) study teenagers from Singapore preferred online media for entertainment and leisure information, where accuracy and reliability were not perceived as important. Gross (1999) found that for imposed tasks pupils used more sources than for self-generated tasks and Lee, Ayers and Holden (2014) found pregnant women with high risk conditions used more sources than other pregnant women. Flanagin and Metzger (2000) found that the longer the association with the internet, the more credible it is found BUT also the more sceptical the user becomes and verifies the information more carefully. (This will be addressed further in section 6.3.4). Slovic's (1999) study suggested there might be gender-based differences in risk perception.

Risk perception was found to be a component of many facets of this empirical survey (Tables 5.74 to 5.79). Pupils perceive imposed tasks to pose a higher risk than self-generated tasks (Table 5.68). Pupils perceive the risk associated with reference information (in this survey the reference information was of a medical nature) to be higher than with other types of information (Table 5.69). A greater percentage of pupils who perceived the risk to be high chose the internet as the most credible information channel. When risk was perceived to be low, there was greater diversity of choice, with television getting noticeably more support (Table 5.71). Boys perceived all tasks to have a lower risk than girls but the least difference was found for imposed tasks (Table 5.61). Risk perception varied according to a pupil's experience of a particular scenario, with experienced pupils perceiving the risk to be higher for every scenario (Table 5.72). Pupils did articulate a perception of the risk involved in choices when giving reasons and alternate reasons for their choice (Table H.1) – "My family would suffer with me if I chose wrongly" or from an apathetic perspective, "I don't really care."

Triangulating the subject literature findings with those of the empirical survey, risk appears to be an integral factor affecting pupils' information channel credibility perceptions. Flanagin and Metzger's (2000) finding that more verification of commercial information than leisure information occurred corroborates the finding that pupils perceived greater risk associated with getting wrong commercial information than leisure

information. The participants in Duffy, Liying and Ong's (2010) study and the pupils in this empirical survey recognised the role of risk but their responses were contrasting. The Singapore teenagers went to the internet when they perceived the risk to be low, whereas the South African ones relied more on the internet when they perceived the risk to be high. Regarding the effect of risk on number of information sources, while there appears to be a contradiction between the subject literature and empirical data, actually the empirical survey measured the numbers of pupils choosing each information channel rather than how many channels a particular individual chose. Flanagin and Metzger's (2000) finding that pupils verify information more closely the greater their experience with the medium is similar to the empirical finding that pupils with experience of an information need perceive the risk to be higher than inexperienced pupils. In spite of imposed tasks being perceived by pupils as posing a serious risk, studies indicate pupils' apathy to information credibility assessment (Agosto, 2002; Gunter, 1992; Rieh, 2002). The prediction of a gender-based difference in risk perception is corroborated by the empirical data.

A factor possibly affecting risk perception relates to the internet having been taken as a single information channel for the purposes of this study. Pupils might see the various components of the internet as offering a cross reference and verification of information hence reducing risk.

Of interest for education is that for imposed tasks the difference between boys' and girls' risk perception was statistically insignificant. This could point to boys responding positively to pressure being placed on them by teachers to take more care with school-based tasks, since in the pupils' context, imposed tasks are generally school-related.

Thus gender, past experience, differing contexts, types of information as well as whether the task was imposed or self-generated affect risk perceptions. Differing risk perceptions also result in different credibility perceptions. It is beyond the scope of this study to identify the exact causal factor. This is a topic for further study.

6.3.4 Feedback loop and perceptions of information channel credibility

The feedback loop in the information credibility model corresponds to pupils' experience. They have a certain perception of credibility, which is modified over time as a result of feedback from choices they make.

Adults tend to rely on their experience (and resultant intuition) when making informal decisions on credibility (Gross, 1999; Hertzum *et al*., 2002; Julien & Michaels, 2002; Kostagiolas *et al*., 2014). Yang, Aloe and Feeley (2014) find that existing knowledge is a good predictor of information choices. This is clearly a drawback for pupils, whose experience is limited (Eastin, 2008:30). Agudo, Fernández-Gago and Lopez's (2009) observation of trust being dynamic and changing over time could possibly point to an age-related effect with respect to experience and this is noted in Section 6.3.1.1, where a shift in emphasis from television to internet is noted with age. Flanagin and Metzger (2000) found that internet usage positively affected perception of the credibility of the internet. Flanagin and Metzger (2000) found that there was no difference in credibility perceptions between internet users and non-users for channels other than the internet. Gunter (1992) found that the greater a participant's involvement in a topic, the greater their concern with the credibility of the information. The subject literature analysis points to pupils' background source of knowledge influencing their perceptions of information channel credibility (Flanagin & Metzger, 2000). Bruce *et al*. (2003) and Hertzum *et al.* (2002) found engineers restricting their sources to known, reliable sources.

In the empirical survey, data on the effect of experience was collected in three areas. Firstly pupils were asked to record the information channels where they had gained most of their previous knowledge (for each of the four information types – reference, commercial, leisure and current affairs). Secondly, for each of the eight scenarios pupils were asked whether they had any previous experience of that particular information need (see Appendix A). Thirdly, pupils' weekly internet usage was used as a measure of their experience with the internet.

Pupils predominantly obtained their background knowledge from television (Table 5.63) but when comparing this to their credibility perceptions, they chose the internet as the most credible information channel (Table 5.73). Pupils' reasons for choosing a particular information channel were based on past experience 24% of the time (Table 5.76). Moreover, qualitative responses included: "Witnessed it" and also the experience of others: "I trust them because they already voted before." Triangulating subject literature with empirical findings about where pupils obtain background knowledge shows a discrepancy. Pupils' existing knowledge does not result in them having credibility perceptions that match this. However, the reasons pupils give for information choices do support the argument that past experience does have a level of influence.

A higher percentage of pupils who record having experienced a particular information need choose the internet as the most credible information channel (Table 5.75). The opposite is true for television. A higher percentage of pupils recording no experience of a particular information need choose television as the most credible information channel. When a pupil does not have experience of a particular information need, one would expect there to be greater reliance on people with experience, such as teachers and experts, but this was not found to be the case in this study (Table 5.75). This would corroborate the empirical finding of this study that pupils with experience of a scenario rated the risk of that scenario higher than inexperienced pupils and the higher the risk, the greater the tendency to choose the internet. This result does not appear to have any equivalent in the literature, but Bruce *et al*. (2003) and Hertzum ***et al.'s*** (2002) finding that well-qualified engineers restricted themselves to known, reliable sources could be a parallel to pupils with experience favouring information from the internet.

The amount of time a pupil spends on the internet per week was also found to affect their credibility perceptions of channels other than the internet (Tables 5.72 and 5.73). Pupils recording low or zero usage of the internet had a much greater incidence of choosing television and interpersonal sources as the most credible information channel than pupils who had greater internet exposure (Table 5.66). The findings thus point to increased weekly internet usage being associated with a narrower spread of information channels perceived as credible. While this result is not matched in the subject literature, internet usage could actually be an indirect measure of socio-economic levels. This would then corroborate other literature findings such as Chatman's (1996) on outsiders. A trend toward a preference for the internet is noted in various studies (Biddix, Chung & Park, 2011; Holtgrafe & Zentes, 2012; Metzger & Flanagin, 2013). This supports the empirical data that 30% of the pupils with zero weekly internet usage still perceive the internet to be the most credible information channel. Some pupils are thinking about the difference between information channel use and information channel credibility – showing evidence of metacognition. This perhaps offers educators an opportunity to guide pupils to think formally about information channel credibility and to build on requirements for evidence of metacognition as seen in the work of Bowler (2010a, 2010b).

6.4 EVALUATION OF THE INFORMATION CHANNEL CREDIBILITY MODEL

It will be valuable at this point to reassess the applicability of the Information channel credibility model (Figure 4.3) presented in Section 4.2.

The model represents the components of information credibility perceptions in a simple, logical, understandable diagram. However the empirical findings unearth numerous inter-relationships. Context influences credibility perceptions. Context also influences risk perceptions. Risk perceptions in turn influence credibility perceptions. Gender influences risk perceptions but does not influence credibility perceptions. Past experience influences both risk perceptions and credibility perceptions . . . The list is almost endless. This should not imply that the model is insufficient to represent information credibility perceptions, but should rather show that the diagram represents a very rich opportunity for further application.

The empirical survey was designed based on the model and thus the components of the model were used and provided useful data. A valuable perspective from which to evaluate the model would however be to go back to other trust models discussed in Section 2.2.

The model makes provision for both the perceived and the actual credibility of the information. While this was supported by the literature, this study deliberately avoided the assessment of credibility, limiting it to perceptions of information credibility. The model and hence the empirical survey unearthed a number of findings, thus it can safely be purported that the model is an effective representation of information channel credibility perceptions.

Trust models are classified according to whether they are hierarchical or distributed. The model used in this study focused on the actual trust relationship between two parties (the trustor – pupil in this case and the trustee – the channels through which information is obtained.) The model is thus flexible and can be used in either hierarchical or distributed trust relationships. The information channels on which the questionnaire focused provided both hierarchical channels (teacher, expert, family), distributed (friends, internet) and mixtures (books, newspapers, brochures). This study touched on reasons why pupils perceived a particular information channel to be credible. In the modern, connected world this is possibly a rich mine of potential study if categorised along the lines of whether hierarchical or distributed trust is concerned.

This study deliberately avoided the traps of convenience and satisficing. However, they came up in both the subject literature as well as empirical data (alternate reasons in Section 5.8.1). Pupils made credibility decisions based on convenience and satisficing.

Another feature of the model, which empirical data brought into focus, was the feedback loop. The diagram simply illustrates the feedback from the information channels affecting credibility perceptions. The feedback loop is more complex than this though. Past experience affects risk perception as well. Past experience itself is complex, as it is affected by components of the context, such as demographics and socio-economic factors. The model does not need to be changed, but note should be taken of the rich inter-relatedness of each component.

Another evaluation of the model could be done by means of deeper statistical analysis. Complex inter-relatedness can be unravelled using analysis of variance in a multiple regression model. This could assess which relationships have the greatest impact on other components while eliminating less important ones. This might enable one to adapt the model. The data collected in this survey was not compatible with multiple regression analysis.

6.5 RELATING FINDINGS TO SCHOOL INTERVENTIONS

The research question guiding the study specifically focused on suggesting actions for schools, and with acknowledgement of the implications for work and everyday life (personal as well as responsible citizenship): **How can school pupils' perceptions of information channel credibility inform school-based interventions?**

This section will make suggestions for school interventions from a teacher perspective. In addition, the findings can be incorporated in school-based information literacy programmes; this is, however, not the focus of this study.

Overall suggestions will address the following:

- pragmatism to meet with acceptance by teachers at grassroots level (this is strongly influenced by the author's own experience as a teacher)
- preparation to move from school to adult and professional life (including professional citizenship)
- the development of metacognitive skills
- establishing a culture of action-based research in school contexts (i.e. implementing interventions, assessing the value and success, adapting, and reassessing; this can be done with learner input.)

The game of cricket has a maxim useful to consider here: "It is better to play with the spin than against it." In the context of this study, the empirical survey has highlighted a

number of ways in which pupils perceive information channel credibility in terms of the effect of risk, experience, type of information and whether the information need was imposed or self-generated. It will be better for educators to harness and direct these tendencies where possible rather than fighting against them. Lu *et al*. (2008) found that perceived information credibility has the greatest effect on online information seeking behaviour. It is thus particularly relevant to use the findings of pupils' perceptions of information credibility to inform recommendations for school-based interventions.

The information needs scenarios used in the empirical part of this study deliberately covered typical school-imposed tasks as well as ELIS tasks. The aim of this section on relating the empirical findings to school-based interventions is not to restrict its scope. The aim is to provide the pupils with holistic tools to guide them towards responsible effective information credibility perception practice for their whole lives. Thus the triangulation of empirical findings on school pupils' perceptions of information credibility and adult information practices can produce a generalisable pragmatic approach to developing responsible information practices not restricted to pupils only.

Adults treat imposed and self-generated tasks differently. Educators would do well to accept that they will have to extrinsically motivate pupils to consider risk perceptions for imposed tasks in order to promote responsible information behaviour in the assessment of channel and information credibility. Educators should build extrinsic motivation into school assignments with regard to credibility assessment over a spectrum of scenarios and covering various types of information needs and information channels.

A finding from the literature analysis highlighted how pupils think they are verifying information credibility, whereas many other studies of both adults and pupils show that what pupils are doing is not satisfactory in the teacher's view. Clarity of expectations between teachers and pupils is essential. Pupils might give input on how to achieve this.

The findings discussed in Section 5.3 to 5.8 will now be contextualised against information practices of professions making intensive use of information (covered briefly in Section 3.4.3). In conjunction with the researcher's experience as a teacher, this will form the pragmatic suggestions for school-based interventions. The practices of information-intensive professions are useful as a framework because of the premium placed on information credibility by these professions. It fits with the vision of schools to prepare pupils for workplace and professionals jobs. What was found to be good practice among them was:

- recognising and addressing potential conflict of interest
- the value of information from sources with self-regulation
- the need for educating users to recognise relevant information credibility criteria
- the importance of internal as well as external consistency of information.

Before using these as a framework for further discussion, it should be noted that in practice, when there is **no** conflict of interest, adults do not waste their time and energy verifying whether the source is self-regulated, using relevant credibility criteria and cross-referencing internal and external consistency. In similar circumstances, educators would also do well to de-emphasise all these checks to avoid becoming irrelevant to the pupils they wish to guide.

6.5.1 Conflict of interests

Mayer, Davis and Schoorman (1995) list benevolence as one of the components of trustworthiness. An information channel with a conflict of interest would not pass the benevolence test. Conflict of interests is a fact of life. There will always be people who are promoting a product or political point of view. In Section 3.4.1, context combination 21, it was noted that although there was ample empirical research involving self-generated tasks by looking for commercial information on the internet, this was a neglected area for imposed tasks. This could perhaps indicate that educators are missing an opportunity to expose their pupils to a relevant real world information need where conflict of interest is fundamental. As part of the metacognitive process educators could profitably use participatory action-based research getting pupils to participate in an iterative cycle of addressing conflict of interest issues, making suggestions, and testing the effect on pupils' information behaviour. Conflict of interest can be addressed from various professional contexts, covering different types of information needs and scenarios, and involving a variety of information channels.

Lundborg, Hensjö and Gustafsson (1998) surveyed medical doctors and found doctors valued non-commercial relational sources of information. In the empirical survey, commercial and political information are types of information prone to a conflict of interest. Added to this, commercial and current affairs information are the two types for which pupils recorded their lowest levels of past experience. The data showed that there were differences that could indicate metacognition on the possible conflict of interest. Commercial information had heightened percentages of pupils choosing television and brochures compared to other information types. For current affairs information, higher percentages of pupils also selected newspapers, family and television compared to other information types. Thus the survey data would indicate that pupils are possibly

recognising a problem with subjective contexts, but this runs counter to studies pointing to pupils not paying attention to information credibility. Pupils should thus be encouraged not to shy away from information displaying a conflict of interest but rather to recognise it as such. Francke and Sundin (2012) mention how credibility is strengthened when there is support from a number of sources. This would point to the good practice of specifically requiring differing perspectives to be acknowledged, as well as editorial accountability. Lim and Simon (2011) note the value placed by students on peer endorsement of information channels. Perhaps educators could insist that pupils acknowledge this rather than avoiding what research has shown to be common practice and in this way facilitate metacognition (Bowler, 2010b). Contexts where information is based on someone's opinion, tap into a rich source of information that could be harnessed by educators to teach pupils to see topics from differing perspectives and hence grow the ability to formulate informed decisions.

The survey data points to the fact that perceived risk influences pupils' information channel decisions so educators should harness this effect to guide pupils' wise assessment of information credibility. Of particular significance is the finding that in spite of generally low perception of risk, boys respond to the pressure of imposed school tasks, indicating that educators can influence pupil information behaviour positively. Organisational risk policy works in business. There is no reason why it cannot be implemented in education. Actually no fundamental educational change would even be necessary, as most syllabi have some built-in goal about the analysis and evaluation of information. Educators would need to take the simple step of sharing with their pupils that the mark allocation for any piece of work would heavily favour credibility assessment compared to structure/logic/content etc. Pupils should respond appropriately. Pupils' input can also be ascertained on means to motivate them to assess the credibility of information channels and to work towards practices expected for the professional world of work.

6.5.2 Self-regulation

Academic research is renowned for its insistence on exclusive use of peer-reviewed sources. Medical science in most countries has a council maintaining standards, as do journalists, the legal fraternity and even commerce. However, Kim, Park and Bozeman (2011) found a difference in the credibility perceptions of college students and those of experts. Numerous articles have been quoted in this study highlighting school pupils' lack of adherence to "acceptable" standards of credibility assessment. Educators have an important task of aligning pupils' information practice with responsible standards and

this needs to incorporate reasonable attention being paid to information from sources who are being held accountable in some way. For trust to occur Mayer, Davis and Schoorman (1995: 712) list the integrity of the trustee as an important criterion and effective self-regulation can strengthen pupils' evaluation of information credibility. This too, is an opportunity for educators to implement action based research. Information seekers should not only ask if the source can be held accountable but to what extent, as often there are no clear-cut answers e.g. to what extent is a book by a reputable publisher "accountable".

As was discussed in Section 6.3.1, there is some response by pupils to conflict of interest and inexperience. However, there does not appear to be any resultant preference for information channels that have editorial accountability. The internet is still the dominant choice. This points to a possible need for school-based intervention. The first consideration, which has previously been touched on, is how adults are pragmatic about credibility assessment in contexts that do not need stringent analysis. Schools would do well to acknowledge this and not alienate pupils by setting expectations that are out of touch with common practice. On the other hand, should the context involve risk such that rigorous accountability is required, educators need to be able to convince pupils of the necessity of assessing the source's accountability. Thus a pragmatic approach by educators would be recommended: If there is no risk then lack of stringent assessment of information should be readily accepted by educators. However, should there be a risk, credibility assessment needs to be a central requirement.

Based on the survey data, pupils readily hold different perceptions of information channel credibility for different contexts and different types of information and thus it is not inconceivable that educators can get pupils to apply metacognition to what they are doing. Data discussed in Section 5.4.1 indicates an existing level of metacognition already being used by pupils, which can be used by educators to guide pupils' information behaviour by building in a ladder approach throughout a pupil's high school career, setting assignments of increasing complexity until they are prepared for the requirements of the professional working world.

The survey data indicated a low level of previous experience even though the topics were specifically chosen to be relevant to their world. However, there was a marked scarcity of rating of the value of information from an expert. This is in keeping with findings of Case *et al.* (2004) of the move away from two-step information seeking towards the internet as a favoured information channel. This is an area for educators to

influence pupils' perceptions and practice when in a relevant context since in certain medical contexts adults actually choose the experts (Huston, Jackowski & Kirking, 2009). Marsh (1994) contends that people can manage risk if they have experience of a situation and can thus make calculated, informed choices. This supports the value of educators exposing pupils to as many information needs as possible and affords the opportunity to iteratively develop this through action-based research.

Thus, with respect to risk and accountability of information channels, educators should guide pupils to ask two questions:

- What is the consequence to me if this source is not truthful? (Risk evaluation)
- Will anything happen to this person if they are not being truthful to me? (Accountability evaluation)

6.5.3 Credibility criteria

As was noted in Section 4.2.3, little work has been done on the link between the credibility of information and people's perception of the credibility of information. Research has focused on either one or the other. In order for education to make a meaningful impact on pupils' information behaviour, this link will need to be addressed.

Using credibility criteria in education will be discussed from the perspective of limitations of mechanistic checklists and the importance of flexibility dependent on the type of information and context. For trust to occur, Mayer, Davis and Schoorman (1995: 712) list the ability of the trustee as an important criterion, which would correspond to the credibility of the information from a trustee. Education needs to provide pupils with a workable method of assessing information channel credibility. Because this survey avoided the actual finding of information, the place where the effect of using credibility criteria can best be assessed is in the pupils' reason for selecting their preferred information channel of greatest credibility.

Walraven, Brand-Gruwel and Boshuizen, (2009) found that while pupils do not evaluate the credibility of information, they do evaluate whether information satisfies the requirements of the task they have been set. This is corroborated by the 493 responses giving pupils' reasons for their credibility assessment that the channel "has the information you want", without any mention of credibility assessment. While this practice is totally at odds with the practice of adults in information-intensive professions, it does hold hope in that it indicates pupils have a pragmatic approach, which can be steered in a positive direction by educators.

Harris (2008) reports on a pupil's observation that "Wikipedia is an essay's best friend. Wikipedia is a bibliography's worst enemy." Pupils recognise the difference between pragmatism and teachers' expectations. From the empirical survey data it appears that the predominant reason for pupils perceiving information to be credible is that they "believe the information from this channel can be trusted". This is a blanket credibility endorsement without acknowledging a need for more responsible assessment of credibility. Typically credibility criteria require assessment of author and organisation, grammatical correctness, professional design of the site and the external and internal consistency of information. Apart from consistency these are sometimes considered superficial peripheral aspects (Petty & Cacioppo, 1986). As check-list methods become common-place, it becomes easier for information sources to make sure they cover all the criteria independently of the quality of the information, which is termed astroturfing (Lankes, 2008). Meola's (2004) approach points to contextual critical evaluation using authority-reviewed information, comparison and corroboration rather than a mechanistic check list. The empirical data (qualitative and quantitative) from pupils' reasons for their selection of information channels, points to the finding that pupils think they assess information credibility. This is positive for educators as they can use this as a starting point to expose pupils to information that is not credible coming from "trusted" sources and thus guide pupils towards workable assessment strategy with buy-in from the pupils. This is a finding that educators would do well to reward with marks and is also an opportunity for action-based research.

Lim and Simon (2011) find that there are different perceptions of credibility for different types of information. Metzger (2007) suggests a "sliding scale" sensitive to context. Adults have differing perceptions according to the context. Savolainen and Kari (2004) find human sources, print media (newspaper and books) and then networked sources to be the top three ranked positions for valued information sources for everyday information needs. They also emphasise the importance of the internet to complement other sources. Savolainen (2010), in a different context of home buyers, finds a different emphasis with network source as the most valued, followed by print and then human sources. There are two aspects here that can be of value to educators: The importance of adapting approaches for different environments and contexts and secondly the importance of seeing sources as complementary, each with situation/context-specific strengths. The survey data from this study reveals that in various contexts/situations/scenarios pupils have differing credibility perceptions. If educators do not recognise that there is no one-size-fits-all approach to credibility criteria and do not intentionally encourage pupils to differentiate expectations according to context/type of

information, they will be driving a standard that is out of touch with both the adult world, everyday life and pupil practice, as indicated by the survey data. If risk is not serious, it is unwise for educators to force pupils to use stringent credibility criteria. By the same token one would not want to expose pupils to real danger or risk. Perhaps before any assignment, educators and their pupils should make a mutually agreed upon assessment as to the risk associated with the task and hence the credibility criteria that will be a minimum standard.

As has been mentioned before, educators do have a “currency” of marks with which they can influence pupil practice, but there is another option. Gunter (1992) found that the greatest contributing factor to people’s perceptions of television and newspapers’ credibility was how involved the person was in the subject. This could explain why other studies (Agosto, 2002; Hirsh, 1999; Kafai & Bates, 1997) found pupils were not concerned about information credibility of imposed tasks. Educators can choose school tasks that are relevant to pupils’ interests and their desired goals. Along the same lines, mention has been made of the important role of passive information channels. Pupils rate them above the mean although their usefulness in typical school information needs is limited. Television is more interesting than some other sources of information and the average teacher and educators would do well to encourage positive incorporation of passive information channels into school-based activities in order to place pupils on a path of life-long learning.

Another of the findings relevant to credibility perceptions was the difference in perceptions between pupils who had experience of a particular information need and those who did not. This provides an important opportunity for schools to address this imbalance. All pupils will benefit from broad exposure to information needs and schools would also benefit to collect data from pupils’ experience and to use this for assignments.

6.5.4 Consistency

The law looks for corroborating evidence while journalism finds multiple sources to substantiate a story. Rieh and Hilligoss (2008) found that students started from a trusted place, then continued to find many sources and cross-reference them. Genuis (2012) found adults looking for medical information moved easily between formal and informal sources and built trust in the consistency between interacting sources. Legal criteria of internal and external consistency of evidence are a good benchmark from information-intensive professions, which educators can use. The testimony of a witness who cannot

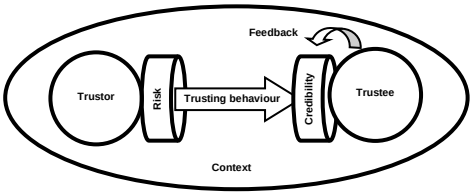
be cross-examined is inadmissible. Similarly, evidence of one witness is cross-referenced with that of other witnesses. These criteria from information-intensive professions point to the importance of pupils needing to assess the internal and external consistency of information instead of focusing only on checklist items which Petty and Cacioppo (1986) and Agosto (2002) refer as peripherals.

Simply asserting that pupils should assess information consistency though, is not a solution. Adults use experience of sources and pre-existing knowledge to verify actual content. However, data for this study shows that pupils lack this experience (more than 50%) which perhaps explains why past experience is not listed by pupils as an important reason for the evaluation of an information channel's credibility. The feedback loop effect was noted in various contexts of the survey data, indicating that experience in a given context or with a certain information channel **does** affect a pupil's perception of information source credibility. This, combined with literature observations that adults use their own experience to guide their assessment of information channel credibility, would then point to the importance of educators intentionally exposing pupils to as many experiences necessitating a spectrum of information channels in as many contexts as possible. Educators would thus need to give their pupils guidance in order to build constructive experiences on which pupils can draw to make information decisions. Thus pupils need to be guided to a strategy to compensate for their lack of experience by perhaps choosing information channels of which they have positive experience or educators need to take a concerted approach of exposing pupils to as many information experiences as possible.

This raises another issue for educators to address. With the proliferation of information available to pupils, it is an easy matter for someone to find information corroborating any outlandish idea – even from credible information sources. A scientific principle of a hypothesis not being able to be proved but rather only disproved is a good start. Pupils should be guided to start with known, reliable sources, move out and find corroborating information, then find opposing views, compare and decide. Thus a different way of information seeking that can be aligned with the principle of following citations from a highly relevant article.

6.5.5 Summary

The foundations of school-based interventions can be summarised with reference to the credibility model (Figure 4.2) and effectively boil down to



metacognition about the information channel and the information rather than simply finding information.

Responsible, trusting behaviour can only occur when there is conscious compatibility between the risk associated with using incorrect information and the credibility of the information. The finding that boys adapt their risk perception in response to school tasks opens the door to educators to use risk to guide pupils into good information practice. Educators need to guide practice (by means of the incentives available to them) so that pupils' ELIS incorporates assessment of this relationship.

Without wishing to be too prescriptive to educators, the survey data suggests that pupils need a structured but pragmatic approach to information channel credibility assessment matching that of adults. It needs to take into account the context of the information need, the type of information needed as well as the pupils' own experience. The flow chart in Figure 6.2 is a suggested approach that gives both structure and flexibility – pragmatism coupled with metacognition. This is one example of addressing the issue at grassroots level.

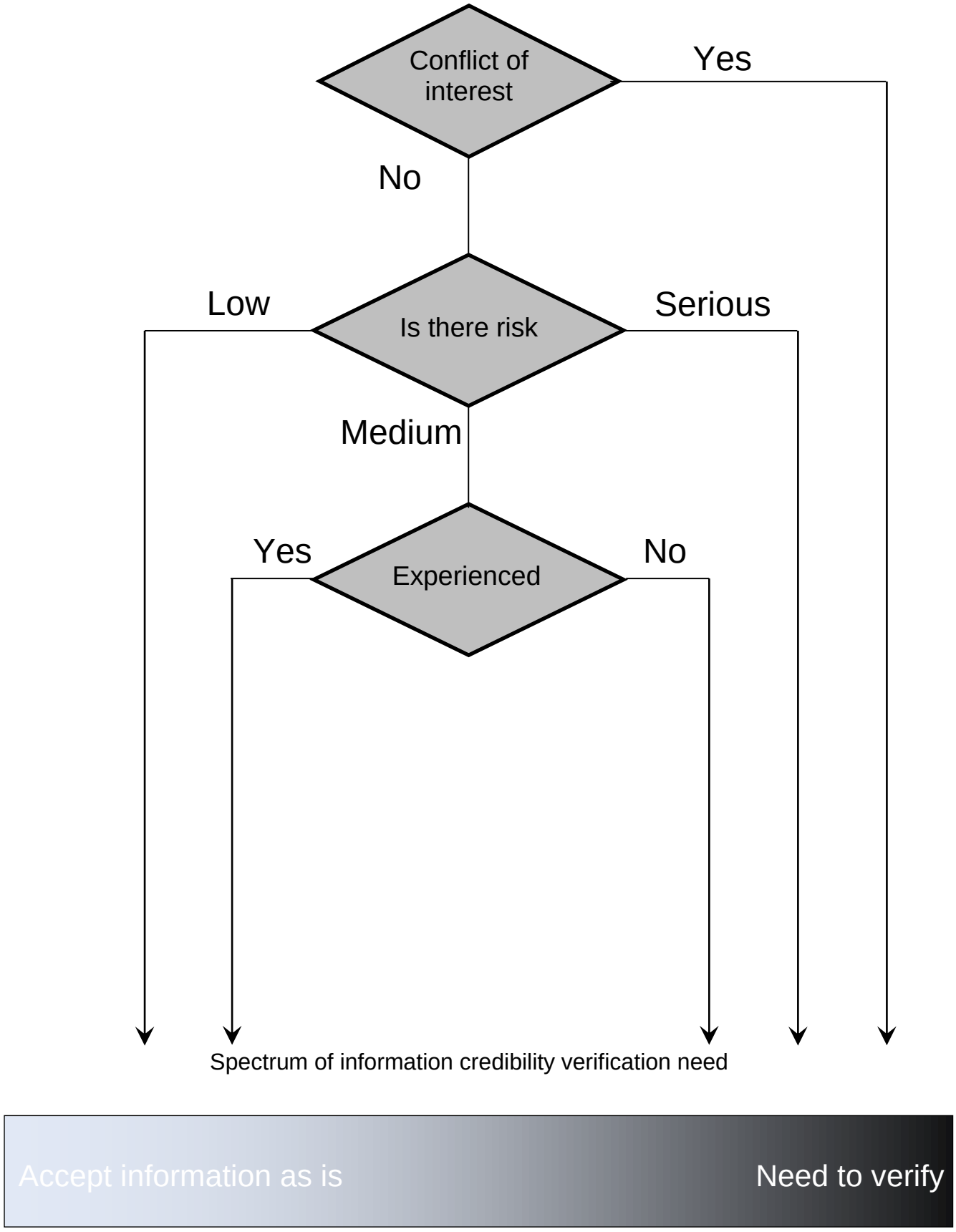


Figure 6.2 Flow chart to guide level of verification needed

Figure 6.2 reflects the findings of the empirical survey and summarises them into a usable guide for pupils to follow when searching for information.

The most important step is first of all to decide whether different people providing the information might have opposing interests or whether they might have an interest in persuading the reader of their perspective. If this is the case, there is no point in going further through the flow chart. Information needs to be scrutinised for external and internal consistency as well as checking for whether the source is held accountable by anyone.

If there is no conflict of interest, one needs to decide whether there is risk associated with this information. This has two aspects: is there a risk in accepting incorrect information but also, is there a risk to the supplier of the information for providing incorrect information, i.e. editorial accountability? If risk is serious, there is no other option but to verify the information carefully. Since it has already been ascertained that that there is no conflict of interest, if the risk of using incorrect information is low then the pupil is reasonably safe to accept information as is.

If there is medium risk then the decision hinges on whether the pupil has had experience of searching for this sort of information in the past.

6.6 CONCLUSION

This chapter began by discussing the findings of the questionnaire survey of three South African schools. These findings were then used to suggest possible school-based interventions to guide pupils to an information strategy more aligned to that of the adult world.

The data findings suggest that risk plays a substantial role in determining a pupil's perception of information channel credibility. The sample covered a wide spectrum of pupils with differing exposure to information sources. Pupils had differing perceptions, depending on the context of the information need as well as the type of information being searched for. Pupils' context and experience were also found to influence their perceptions of information channel credibility.

The suggestions for school-based interventions included working with the existing levels of informal metacognition used by pupils and positively using risk to modify pupils'

apathy to credibility assessment. Accepting different strategies for different contexts and types of information is essential. The role of experience in shaping perceptions was the basis for a suggestion for educators to expose pupils intentionally to as many information seeking experiences as possible. The data and discussions could pragmatically be summarised into a model for high school pupils, which can be used to ask questions of every information source.

- Is there any reason for the source to misrepresent information?
- Is the source bound by rules acceptable to the context?
- Is there a risk to accepting information that is not credible?
- Does the seeker have sufficient experience to judge the credibility of information?
- Is the information externally and internally consistent?

In Sitkin and Pablo's (1992) discussion of risk they note that when the risk takers feel they can control risk by their knowledge and assessment of the context, they can reduce the probability of unfavourable outcomes. This is a strategy that could be used by schools to give pupils a measure of control over the risk involved with information channel credibility assessments.

CHAPTER 7

FINDINGS, RECOMMENDATIONS AND CONCLUSION

7.1 INTRODUCTION

This chapter covers a summary of the findings from literature and the empirical survey pertaining to the research questions posed in Chapter 1. Then practical recommendations for school-based interventions are discussed, followed by suggestions for further studies.

7.2 RESEARCH QUESTIONS

The research question guiding this study was:

> **How can school pupils' perceptions of information channel credibility inform school-based interventions?**

In order to answer the research question, the first step was to develop a framework within which to assess perceptions of information channel credibility.

- What has been reported on perceptions of information credibility and information channel credibility?
    - School pupils
    - Students and adults
    - Professionals in information-intensive environments
- How can trust models guide a study of pupils' perceptions of information channel credibility?

Based on answers to these issues, a model was presented to collect data to answer the following questions:

- What factors influence school pupils' perceptions of information channel credibility?
- What school-based interventions could be recommended to address the shortcomings in the perceptions of pupils that can prepare them to meet the information requirements of adulthood?

The empirical part of the research was conducted by means of a predominantly quantitative survey of 548 grade 8 and grade 12 pupils from three different high schools in the Mphumalanga province of South Africa. Questions were based on the directions indicated by the literature research. Specifically pupils were asked for demographic details such as age, grade, gender and internet usage and about where they obtained their background knowledge. Then, for a number of scenarios, pupils were asked to rank their perceptions of the credibility of various information channels for different information needs and imposed or self-generated tasks. For each scenario they were also required to record whether they had experience of this information need, as well as their perception of the risk associated with acting on incorrect information.

7.3 RESEARCH DESIGN

Approach	Predominantly quantitative with a limited qualitative component
Data collection	Printed questionnaire. Self-administered by pupils
Clearance	Ethical clearance was obtained from University of Pretoria School permission was obtained from principals Informed consent was obtained from parents and pupils
Questionnaire	Limited demographic information. Information on where background knowledge was obtained. Pupils' credibility perceptions of information channels for given scenarios. Interviews according to a semi-structured questionnaire with school principals.
Data analysis	Quantitative: Descriptive and inferential statistics Qualitative: Thematic analysis
Sampling	Three South African urban schools Grade 8 and grade 12 pupils – all pupils targeted

The next two sections cover the findings from the literature and then the findings from the empirical component. These two lay the foundation for proposed school-based interventions.

7.4 FINDINGS FROM THE LITERATURE

7.4.1 Reports on school pupils' perceptions of information channel credibility

Much of the previous research pointed to pupils' lack of concern about the credibility of information. It was, however, noted that they often knew the standards their teachers expected, but either were pressed for time or practised satisficing to obtain information that was good enough for the task rather than optimal. In many studies this preference

for ease of access over quality of information is noted but seldom is the question asked why.

Studies found a preference for people as a source of information, which possibly diminished with age.

In more recent years there has tended to be a shift in focus by researchers to the internet as the source of information. This is also a reflection of pupils' increased focus on the internet. There is also greater emphasis on ELIS.

Very little attention was paid to the effect of risk on credibility perceptions or even the purpose and contexts of information needs.

7.4.2 Reports on information channel credibility assessments by students and adults

Students and adults used different credibility assessment standards for their own self-generated information needs as opposed to imposed information tasks. Work-related tasks tended to need factual information, whereas personal searches led to subjective decisions. Often they relied on their own experience and intuition, especially for their self-generated needs, possibly because they were more involved with the topic and could make better judgements because of this.

Adults tended to develop favourite tried and tested information channels that they trusted and that were convenient to access. Interpersonal information channels were found to be important.

Generally two angles are taken on information credibility. There is the actual credibility of the information, determined by factors such as reliability, unbiasedness, accuracy, fairness, objectivity and external endorsement. Then there is the perception of the information being credible, which covers the characteristics of the source, the information seekers' characteristics and peripheral clues (see Table 2.3 and Table 2.4).

7.4.3 Reports on information credibility assessments by professionals in information-intensive environments

It was found that information-intensive professions were more stringent in their analysis of information credibility than the general public. They were aware of potential conflict of interest, the value of information from a source with self-regulation, the importance of

using information credibility criteria and the importance of internal as well as external consistency of information.

7.4.4 Trust models guide a study of pupils' perceptions of information channel credibility

This study began with general trust models and proceeded to apply them to trust of information. Fundamentally trust develops between two parties in a particular context. Trusting behaviour occurs only if risk is sufficiently low and the credibility of the trustee is sufficiently high. Trust models developed for e-commerce focused on how trusting behaviour is modified as a result of experience of various kinds.

Trust models point to the importance of context (information and person), risk and experience in the perception of information channel credibility. These were drawn together to propose an information channel credibility model on which the empirical survey was based.

7.5 FINDINGS FROM THE EMPIRICAL COMPONENT

7.5.1 Factors influencing pupils' perception of information channel credibility

Studies in the literature point to perceptions changing over the life of the pupil, the effect of satisficing, the importance of the context of the information need, previous experience and the risk associated with incorrect information (see Table 2.1).

The empirical findings of this study point to the age of the pupil, the context, the pupils' risk perception, internet usage and previous experience all to some extent affecting pupils' perception of information channel credibility. Pupils do use a level of metacognition with respect to information credibility. The components of the information's context (type of information, whether the information is imposed or self-generated and the channels through which information can be accessed) as well as the components of the seeker's context (experience, levels of internet usage, gender, age and risk perception) have a very interactive influence on one another: The level of pupils' experience of an information need influences their risk perception. Their risk perception in turn influences their information channel credibility perceptions. Risk perception is also influenced by gender and whether the task is imposed or self-generated. Pupils' perceptions of information channel credibility are influenced by the context of the information need, the type of information being found, whether the task is imposed or

self-generated, the risk associated with incorrect information, where they gained their background knowledge as well as the experience of the pupil. Demographic factors such as age, computer usage and gender also have an influence on pupils' perception of an information channel's credibility.

The information channel credibility model covered the aims of the study in so far as it enabled the research questions to be answered, but all the components of the model were found to be highly inter-related and more complex than a superficial viewing of the model would reveal.

Findings informed suggestions for school-based interventions. Specifically recognising and addressing potential conflict of interest, the value of information from sources with self-regulation, the need for educating users to recognise relevant information credibility criteria and the importance of internal as well as external consistency of information. It is essential to support pupils to progress from the world of school to the professional workplace, to be responsible citizens in everyday-life, to focus on appropriate metacognitive skills and to assess information credibility based on the context not wasting time with unnecessary criteria.

Some of the findings on pupils' credibility perceptions could inform more effective communication with young people e.g. in communication aimed at them such as healthy life styles, responsible choices, and career decisions, as well as communication regarding educational assessment opportunities. Such communication might be aligned with the work of Kuhlthau, Maniotes and Caspari (2012) on guided inquiry, as well as Bowler (2010a) on metacognition.

7.6 AIM AND OBJECTIVES

In Section 1.6, the aim of the study was stated to be to propose a model that can guide studies on information channel credibility perceptions to inform school-based interventions for guiding pupils to undertake credibility assessments in line with those of information-intensive professions. Objectives included determining what was published on trust, credibility and risk, suggesting a model as framework and collecting empirical data to (1) determine the credibility perceptions of pupils in selected South African schools and (2) to test the model's suitability for future use based on its applicability to the collected data.

As shown in the preceding sections (Section 7.4 and 7.5) reporting on the findings from the literature and the empirical component, this aim and objectives have been met in the research. The model in Figure 4.3 is appropriate to collect data on both hierarchical or distributed information channels, the effect of the feedback loop and the rich inter-relatedness of all the components.

It was the inter-relatedness of the components of the information channel credibility model that underpinned the recommendations for school-based interventions. The context of the information need significantly affects the approach needed for assessing information channel credibility. Similarly the characteristics of the information seeker (experience, age, gender, risk perception) need to affect the metacognitive process of assessing the credibility.

7.7 RECOMMENDATIONS

This research was specifically aimed at understanding high school pupils' perceptions of information channel credibility. However, the model developed and the approach used, together with findings from this study, might also be translated/extended to the academic context at tertiary level, e.g. universities and assessment opportunities such as assignments. Detail on this is not provided at this stage.

7.7.1 Recommendations for school-based interventions on a pragmatic level

Literature and empirical findings were used as a platform to make recommendations on school-based interventions to guide pupils to more responsible information credibility assessments. These are explained in Sections 7.4 and 7.5. Findings on school-based interventions focused on using a flow chart model (as a first step in implementing recommendations from this study) to guide decisions on issues of information credibility assessment as well as action-based research projects as suggested in Section 6.5.

- Both pupils and adults have a flexible approach to credibility perception depending on context, type of information and origin of the information need. This implies the need for metacognition on the part of pupils to consider (and articulate) why in some circumstances they need to be meticulous in assessing information channel credibility while in others information can safely be taken at face value.
- Similarly the information might come from a source representing a conflict of interest. A strategy was suggested for pupils always to be required by educators

to assess whether the source possibly represents a conflict of interest, then to decide on the risk of using incorrect information, whether they had sufficient experience to judge the credibility of the information and finally whether there was consistency with other information sources – in cases where the risk involved require this.

- A strong characteristic of the suggestions was the need for the strategy to mimic (in certain contexts) good pragmatic practice of adults and not to insist on theoretical one-size-fits-all credibility assessment criteria when on occasions extensive assessment is unnecessary. (Noting that not all adult information practices are necessarily good.)
- A concern was the number of pupils stating that their reason for trusting a channel was that it had the information they wanted i.e. they evaluate whether information satisfies the topic of the task rather than whether it credible or not. This needs to be addressed by school-based interventions.

Educators should purposively move the reward from the acquisition of information to the process of assessing the information's credibility in a context appropriate manner.

7.7.2 Recommendations for practice on a holistic level

In practice information seekers (adults and pupils) do not necessarily adhere to information credibility standards expected in schools. The following recommendations extend beyond the schools context:

- It should be accepted that a one-size-fits-all approach to information credibility assessment is unwise. Assessment criteria have to be adapted according to the context and situation of the individual in context.
- The metacognition of the process of information credibility assessment should be emphasised from school to workplace and ELIS as citizens, especially skills such as distinguishing between trust of an information channel rather than assessing the information itself and recognising potential dangers of convenience and satisficing as well as the need to take cognisance of the level to which the source is held accountable for the information.
- Assessment standards applying to the credibility assessment of information to be used in school tasks should be clearly communicated to pupils. In certain circumstances these should be negotiated with and adapted according to the context/situation.

- Adults make intuitive credibility assessments based on their experience. Pupils need to be required to use metacognition to assess their own level of experience and hence their capability of making credibility assessments for a particular topic.
- Educators need to actively expose pupils to settings which require differing strategies and information types relevant to their move from school to workplace and their role as a responsible citizen.
- Age appropriate expectations for information credibility assessment should be scaffolded into the teaching plan and applied to coincide with the progression through the school grades.

7.7.3 Recommendations for theory

- Metacognitive skills can be aligned with risk perception e.g. the impact of risk perception on willingness to apply and improve metacognitive skills
- The information credibility model should be extended to accommodate appropriate theories such as trust theory, self-efficacy theory, constructionist learning theories and work on collaborative information seeking / selection of information channels.
- The social capital embedded in some internet resources and hence the implicit credibility should be aligned with actual accountability, and should be further explored.

7.8 LIMITATIONS OF THE STUDY

The empirical study was carried out in a South Africa urban area. While it is reasonable to generalise the findings to other South African pupils, it might need further research to decide if these findings are generalisable further afield.

The term “internet” was intentionally not differentiated into its ever-evolving myriad of components. This could be a limiting factor in applying findings to a specific component.

The empirical data was predominantly drawn from quantitative information. This could be enriched if supplemented by interviews and focus groups.

Some of the data possibly pointed to differing understanding of the concept of risk for instance. If the sample size was reduced and pre-survey standardizing discussions held this could have been avoided. However this could then have introduced researcher bias among the children.

The empirical survey did not make provision for combinations of complimentary information channels e.g. asking teacher about something they saw on television.

The restrictions imposed by adhering to standards of the university ethics committee for informed signed parental consent, while absolutely justified, could have eliminated a particular subset of pupils.

A problem with any survey is the danger of questions suggesting ideas that were never in the participants mind before the question e.g. when asking pupils to record risk perception, perhaps they had never given this a thought and made decisions on different factors and yet give answers because the question is there.

An ironic problem with relatively large samples is the fact that statistically significant findings can be found that would not necessarily be significant in smaller samples.

7.9 SUGGESTIONS FOR FURTHER STUDIES

- **Longitudinal participatory action research taking pupils through:**
  - Entrance and exit levels of high school
  - Entrance into higher education e.g. university
  - Entrance into workplace if not entering higher education. Such a study should be based on the implementation of suggestions for school-based interventions in this study

- **Assessing the use of the information channel credibility model in a study with adults in information intensive professions.** This study was confined to high school pupils for the purpose of recommending school-based interventions. An extension to include adults in information-intensive professions can provide more data to accommodate the transition from school to adult life.

- **Assessing the use of the information channel credibility model in a study with adults in ELIS.** This study was confined to high school pupils for the purpose of recommending school-based interventions. An extension to include adults in ELIS to accommodate the transition from school to adult life.

- **Difference in information credibility perceptions between self-generated tasks, simulated self-generated tasks, and imposed tasks at school level.** This survey compared credibility perceptions of imposed tasks and information needs typically experience by pupils (simulated self-generated). There was thus not a comparison of genuinely self-generated tasks.

- **The effect of internet usage on information credibility perceptions.** This survey compared pupils with and without internet exposure to ascertain the effect of internet usage on pupils' perceptions of information credibility. A time-related study would be interesting: One would take people unexposed to the internet and follow changes in their credibility perceptions as they become exposed to the internet.

- **Impact of virtual interaction on perceptions of similar demographics**. Levin, Whitener and Cross (2006) mention the effect of similar demographics on trust. This would imply that information from friends, family and teachers would be perceived as more credible that information from less similar sources. In this survey the internet was perceived by pupils to be more credible than interpersonal information channels. In the "shrinking" world with increasing ease of communication, do pupils/people now perceive similar demographics to be broader than geographical location?

- **Cultural differences in information credibility perceptions.** This is especially relevant in culturally rich/diverse societies such as South Africa. Liu, Rau and Wendler (2015) found differences in trust between cultures. The empirical findings of this study were an aggregate of a spread of South African cultural backgrounds and further study could deliberately design the survey to identify cultural effects.

- **Ascertain the value of participatory action-based research on pupils' information behaviour when exposed to information intensive professions methods of handling conflict of interests**. Professionals in law and journalism typically handle information with significant conflicts of interests. Exposing pupils to the methods professional employ offers the opportunity to use an iterative process to study the effect on pupils' information behaviour.

- **Use participatory action-based research to develop a strategy for information credibility assessment based on methods used by information**

intensive professions. Using an iterative approach, starting from standards used by information intensive professions, participatory action-based research could work back to a pragmatic strategy for pupils to assess information credibility.

7.10 CONCLUSION

A model was proposed relating pupils in context to their perception of information channel credibility. Data from an empirical survey of high school pupils showed that their perceptions of information channel credibility are affected by the perceived risk of acting on incorrect information, their previous experience and the context in which the information need occurs. Pupils use a level of metacognition with regard to information channel credibility.

School-based interventions are suggested to encourage responsible assessment of information channel credibility, including adaptation of assessment strategies according to circumstances, the simulation of risk by means of mark allocation for metacognition about information channel credibility, intentional exposure of pupils to a wide range of information needs and exposure to credible as well as less credible information channels.

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APPENDICES

APPENDIX A: QUESTIONNAIRE

Wording in the questionnaire was deliberately kept as colloquial as possible so as not to intimidate high school pupils. One term in particular that is worthy of highlighting is that of an "information channel." This is a technical term not in common use by high school pupils and hence the term "information source" was used.

Similarly terms relevant to the researcher such as "demographics" and section headings were omitted if they did not enhance the understanding of requirements for the pupils.

The four pages of the questionnaire were printed back to back in booklet format. The questionnaire appears on the next four pages. Numbering of questions on the questionnaire as well as giving headings to various sections were considered prior to finalising the questionnaire. In the interests of making the questionnaire as teenager-friendly as possible, reducing superfluous clutter, it was decided to omit these.

A pilot survey was run with a draft of this questionnaire and as a result of this (see Appendix E), an instruction sheet was given to the survey supervisors in order to pre-empt possible discrepancies (see Appendix F).

All pupils had to sign an informed consent form (see Appendix C) indicating that they understood the purpose of the research and that they were not put under pressure to participate. If they were under 18 years old their parents also had to sign the form before they could complete the questionnaire. Questionnaires were all completed in class under the supervision of a teacher and taken in at the end of the lesson.

School Pupils' Perceptions of Information Credibility

I am Owen Buchanan, a doctoral student at University of Pretoria and I would appreciate you helping me understand what information sources you trust and why. Will you please complete the following questionnaire?

Grade: _____ Gender: _____ Age: _____

How many hours per week do you spend on average on the Internet? _____

Source of basic knowledge from the past

Below are four categories of information needs (Reference, Leisure, Commercial and Current Affairs) which I assume you will have a certain level of knowledge obtained from the past.

Where did you obtain this **PAST KNOWLEDGE**?

In **each row** below write the numbers 1 to 5 where 1 is under the source where you have, in the past, learned most of your information about that information type. Put a 2 for the second most important source and so on up to 5.

	Internet	Newspapers	TV	Magazines	Books	Brochures	Friends	Family	Teachers	Experts
Reference *e.g. Information and facts, like for legal issues, health, science, education.*										

	Internet	Newspapers	TV	Magazines	Books	Brochures	Friends	Family	Teachers	Experts
Leisure *e.g. Entertainment, sport, movies.*										

	Internet	Newspapers	TV	Magazines	Books	Brochures	Friends	Family	Teachers	Experts
Commercial *e.g. Things you can buy, prices, good deals, product information.*										

	Internet	Newspapers	TV	Magazines	Books	Brochures	Friends	Family	Teachers	Experts
Current affairs *e.g. News, what's going on in your area, the country and the world.*										

Scenarios of typical information needs

On the next pages are 9 situations where you might need information to make a decision or to do something. Please complete the information requested and do not be shy to ask for help if anything is unclear.

1 Buying a cell phone for yourself

You want to buy a cell phone. There are so many types of phones and contracts and you want help in deciding which phone to buy.

Have you ever had to find information about buying a cell phone before? **Yes / No**

Place cross where you feel the risk to you would be if you got the wrong information.

Serious risk

No risk

Rate the source you trust the most for this as 1 and then down to 5 for 5th best.	
Internet	
Books	
Brochures	
Magazines	
Newspapers	
TV	
Friends	
Family	
Teachers	
Other experts	

Select ONE reason why you trust the source you marked 1 here	
You trust the **person(s)** who supplied or created the information	
You believe the **information** coming from this source can be trusted	
You have used this source in the **past** and trust it	
You believe the type of source has the information **you want**	
Other reason:	

2 School project

You have a school project on AIDS and need to know about the disease.

Have you ever had to find information about AIDS before? **Yes / No**

Place cross where you feel the risk to you would be if you got the wrong information.

Serious risk

No risk

Rate the source you trust the most for this as 1 and then down to 5 for 5th best.	
Internet	
Books	
Brochures	
Magazines	
Newspapers	
TV	
Friends	
Family	
Teachers	
Other experts	

Select ONE reason why you trust the source you marked 1 here	
You trust the **person(s)** who supplied or created the information	
You believe the **information** coming from this source can be trusted	
You have used this source in the **past** and trust it	
You believe the type of source has the information **you want**	
Other reason:	

3 Municipal elections

You want to know what each of the parties in your municipal elections promise for service delivery.

Have you ever had to find information about political parties before? **Yes / No**

Place cross where you feel the risk to you would be if you got the wrong information.

Serious risk

No risk

Rate the source you trust the most for this as 1 and then down to 5 for 5th best.	
Internet	
Books	
Brochures	
Magazines	
Newspapers	
TV	
Friends	
Family	
Teachers	
Other experts	

Select ONE reason why you trust the source you marked 1 here	
You trust the **person(s)** who supplied or created the information	
You believe the **information** coming from this source can be trusted	
You have used this source in the **past** and trust it	
You believe the type of source has the information **you want**	
Other reason:	

4 English essay

You have to write a school essay on a movie and need background information.

Have you ever had to find information about a movie before? **Yes / No**

Place cross where you feel the risk to you would be if you got the wrong information.

Serious risk

No risk

Rate the source you trust the most for this as 1 and then down to 5 for 5th best.	
Internet	
Books	
Brochures	
Magazines	
Newspapers	
TV	
Friends	
Family	
Teachers	
Other experts	

Select ONE reason why you trust the source you marked 1 here	
You trust the **person(s)** who supplied or created the information	
You believe the **information** coming from this source can be trusted	
You have used this source in the **past** and trust it	
You believe the type of source has the information **you want**	
Other reason:	

5 Does one of my friends have TB (Tuberculosis)?

You need to find out all you can about this disease. Is it catchy? What are early symptoms?

Have you ever had to find information about TB before? **Yes / No**

Place cross where you feel the risk to you would be if you got the wrong information.

Serious risk

No risk

Rate the source you trust the most for this as 1 and then down to 5 for 5th best.	
Internet	
Books	
Brochures	
Magazines	
Newspapers	
TV	
Friends	
Family	
Teachers	
Other experts	

Select ONE reason why you trust the source you marked 1 here	
You trust the **person(s)** who supplied or created the information	
You believe the **information** coming from this source can be trusted	
You have used this source in the **past** and trust it	
You believe the type of source has the information **you want**	
Other reason:	

6 Math Literacy exercise

As a Mathematical Literacy exercise you need to find prices on cell phone call rates to work out the best deal.

Have you ever had to find information about cell phones contracts? **Yes / No**

Place cross where you feel the risk to you would be if you got the wrong information.

Serious risk

No risk

Rate the source you trust the most for this as 1 and then down to 5 for 5th best.	
Internet	
Books	
Brochures	
Magazines	
Newspapers	
TV	
Friends	
Family	
Teachers	
Other experts	

Select ONE reason why you trust the source you marked 1 here	
You trust the **person(s)** who supplied or created the information	
You believe the **information** coming from this source can be trusted	
You have used this source in the **past** and trust it	
You believe the type of source has the information **you want**	
Other reason:	

7 SA Idols

You want to enter SA Idols and need to know how to enter.

Have you ever had to find information on entering a talent competition? **Yes / No**

Place cross where you feel the risk to you would be if you got the wrong information.

Serious risk

No risk

Rate the source you trust the most for this as 1 and then down to 5 for 5th best.	
Internet	
Books	
Brochures	
Magazines	
Newspapers	
TV	
Friends	
Family	
Teachers	
Other experts	

Select ONE reason why you trust the source you marked 1 here	
You trust the **person(s)** who supplied or created the information	
You believe the **information** coming from this source can be trusted	
You have used this source in the **past** and trust it	
You believe the type of source has the information **you want**	
Other reason:	

8 History project

In a school project of South African history, you need information on the history of each of the political parties in your area.

Have you ever had to find political information before? **Yes / No**

Place cross where you feel the risk to you would be if you got the wrong information.

Serious risk

No risk

Rate the source you trust the most for this as 1 and then down to 5 for 5th best.	
Internet	
Books	
Brochures	
Magazines	
Newspapers	
TV	
Friends	
Family	
Teachers	
Other experts	

Select ONE reason why you trust the source you marked 1 here	
You trust the **person(s)** who supplied or created the information	
You believe the **information** coming from this source can be trusted	
You have used this source in the **past** and trust it	
You believe the type of source has the information **you want**	
Other reason:	

9 Your own information need

Write down a situation in the **last 6 months** where you needed to find information.

Had you ever had to find this information before? **Yes / No**

Place cross where you feel the risk to you would be if you got the wrong information.

Serious risk

No risk

Rate the source you trust the most for this as 1 and then down to 5 for 5th best.	
Internet	
Books	
Brochures	
Magazines	
Newspapers	
TV	
Friends	
Family	
Teachers	
Other experts	

Select ONE reason why you trust the source you marked 1 here	
You trust the **person(s)** who supplied or created the information	
You believe the **information** coming from this source can be trusted	
You have used this source in the **past** and trust it	
You believe the type of source has the information **you want**	
Other reason:	

APPENDIX B: TEMPLATE FOR PERMISSION FROM SCHOOLS

Details are not supplied here in order to respect the confidentiality of the schools involved in this survey. The template of the letter drafted for the schools to verify that they gave permission for the survey is, however, shown here. The signed letters were submitted to the faculty committee for research ethics and integrity when requesting ethical clearance to collect data.

Date:

School Name

City

Mpumalanga

To whom it may concern

This is to certify that Mr O Buchanan has obtained the necessary permission to conduct a survey in this school. We understand that the survey is towards his Doctoral studies in Information Science with the University of Pretoria and covers pupil's perceptions of information source[34] credibility. We have seen a copy of the survey and the informed consent letter which each participating pupil will need to sign.

Name of Principal School Stamp

Signature

☎

✉

[34] The term "source" is used here instead of "channel" for consistency with the questionnaire. See Section 4.4.4.4 for justification for this use.

APPENDIX C: INFORMED CONSENT

Wording in the informed consent form was deliberately simplified so that the high school pupils would not be intimidated or confused by the terminology while at all times every effort was made to uphold the spirit and letter of what is required in terms of ethical research conduct.

There is also a requirement by the University of Pretoria that parental permission is received for surveys of pupils under the age of 18 and thus there is a block for a parent's signature on the form as well.

The form was printed side by side so that it could be divided and one copy kept by the pupil and the other submitted to the researcher.

The form used appears on the next page.

Researcher's copy

Informed consent form: School Pupils' Perceptions of Information Credibility

I, am

happy to complete this questionnaire.

Mr Owen Buchanan has explained to me that:

- I can choose whether to participate or not.
- There is no pressure on me to participate.
- I will not get hurt.
- His objective is to find my views on the trustworthiness of information.
- All the information is confidential and anonymous.
- It is part of his Doctoral studies and he will use my answers together with everyone else's to better understand school pupils and help them.
- He might use summarised information in publications.

My signature		/ 5 /2015
My friend's signature		/ 5 /2015
Parent signature		/ 5 /2015
Mr Buchanan		/ 5 /2015

Pupil's copy

Informed consent form: School Pupils' Perceptions of Information Credibility

I, am

happy to complete this questionnaire.

Mr Owen Buchanan has explained to me that:

- I can choose whether to participate or not.
- There is no pressure on me to participate.
- I will not get hurt.
- His objective is to find my views on the trustworthiness of information.
- All the information is confidential and anonymous.
- It is part of his Doctoral studies and he will use my answers together with everyone else's to better understand school pupils and help them.
- He might use summarised information in publications.

My signature		/ 5 /2015
My friend's signature		/ 5 /2015
Parent signature		/ 5 /2015
Mr Buchanan		/ 5 /2015

APPENDIX D: PRINCIPAL INTERVIEW SCHEDULE

Principal Interview Schedule[35]

(or representative of Principal)

Study Title: School Pupils' Perceptions of Information Channel Credibility
Researcher: Owen Buchanan
Supervisor: Prof Ina Fourie

The following questions will guide the interview: (Made available to principals beforehand)

School name:

How many pupils are there in the school?

	Boys	Girls	Total
School			
Gr 12			
Gr 8			

What are the school fees? What quintile does this fall into? (This can be found on school web site)

What computer facilities do your pupils have at school?

What internet connectivity is available to the pupils in the school?

What IT training do the pupils receive?

What library facilities do you have?

What library and information literacy skills training do pupils receive?

Is there anything else of relevance to the context of the pupils in this school?

[35] The purpose of the Principal interview schedule is to collect data on the school for context of the pupils. The school name will not be used in any way – simply referred to as School A, B or C.

APPENDIX E: LESSONS LEARNED FROM PILOT STUDY

In order to pre-empt problems in the final survey, a pilot study was run with 20 pupils with ages ranging from 14 to 18. The following was learned:

- Pupils were asked to rank items from 1 to 5. On occasion they would start with 1 and 2 and then jump to 5, leaving out ranks in between. This was taken at face value and pupils were regarded as having an opinion on the top few and the bottom but being ambivalent about the others. In order to avoid this problem, an item was added to the survey supervisors' instruction sheet drawing attention to the ranking process and mentioning that it was not necessary to include ranks all the way to five, should they wish to stop before that. From the completed questionnaires this appeared to have had the desired effect, since pupils gave sequential numbers.

- Looking at some of the responses, it is evident that the wording of a question can influence responses. One particular question was Scenario 2: "School project on AIDS". Participants in the pilot project regarded it as extremely risky if one found non-credible information. This did not correlate with risk perceptions of other school work (i.e. the other imposed scenarios); it seemed as if the response was based on the assumption that the wrong information would lead to infection rather than recognising that it is a school project that is being assessed. Wording was changed to "School Project" and then the topic was mentioned in the explanation.

- The Yes/No responses were occasionally omitted, suggesting that it was not prominent enough in the questionnaire. This was therefore coloured in with a yellow highlighter and survey supervisors were requested to emphasise this requirement.

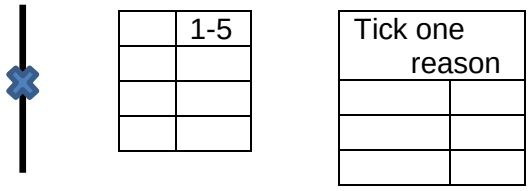
- Everything on the survey required a tick, rank or number to be written down, except for the final scenario where participants actually had to write down an information need. A number of the pilot study participants did not do this. It was felt that this open-ended option was an important source of data and thus the question was retained but an instruction emphasising how it was to be answered was included in the instruction sheet for the survey supervisors. Possible reasons are that it was different from the rest of the survey or perhaps second language speakers did not feel confident about expressing themselves.

APPENDIX F: INSTRUCTION SHEET FOR SURVEY SUPERVISORS

As a result of lessons learnt from the pilot study, the following sheet was drawn up for the survey supervisors in order to close loopholes and improve consistency. The procedure followed for the survey is described in Section 5.2.1.

Instructions to pupils filling out questionnaire

- No parent/pupil consent form, sorry no filling in of questionnaire. Please place consent form inside questionnaire.
- First page is about where you got your background knowledge.
- Page 2-4 is about what you think is trustworthy/credible in each situation.
- In each of the 9 situations, there are 4 things to fill in each time. Please make sure you do all 4:



- Situation 9 needs writing! This is your own information need.
- When ranking from 1-5 you don't have to go all the way to 5 if you don't use those sources.

APPENDIX G: ETHICS COMMITTEE APPROVAL LETTER

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Reference number: EBIT/18/2015 11 May 2015

Mr KO Buchanan
P O Box 5456
Barberton
1300

Dear Mr Buchanan,

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Ethics Committee refers.

1 I hereby wish to inform you that the research project titled "School pupil's perceptions of information channel credibility" has been provisionally approved by the Committee.

Question 5 may reveal the pupil's health state (Do I have TB?). Please rephrase to be similar to question 2.

This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Codes of Research Ethics of the University of Pretoria, if action is taken beyond the approved proposal.

2 According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of any member of the Faculty Committee who will deal with the matter.

3 The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Prof JJ Hanekom
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

APPENDIX H: ALTERNATE REASONS FOR CHOICE OF MOST CREDIBLE INFORMATION CHANNEL

In order to determine reasons for a pupil's choice of a particular channel, they were given four possible options from which they had to select one. The options were

- You trust the person(s) who supplied or created the information.
- You believe the information coming from this source can be trusted.
- You have used this source in the past and trust it.
- You believe the type of source has the information you want.

A space was provided for pupils to write their own reason in case none of those provided was applicable. Pupils' alternative reasons are listed in the table below. Pupils' reasons have been recorded in their original form and thus grammatical / spelling errors are retained. Sometimes the pupils would supply a reason but they had not specified their choice of most credible information channel. In these cases the information channel is listed as "none". Pupils' comments are presented without corrections.

Scenario	Information channel chosen as most credible	Reason for choice given in pupils' own words
1. Cell phone purchase	Internet	I have used it in the past
		Because he or she knows how to use it
		It comes from the internet and most of the things are true
		It is safe
		Because it has a lot of information
		They are experts and know what they are doing
	Television	Only the best phones are advertised on T.V. (I believe)
		It is most trusted
		They give you right information
	Family	Because I trust and believe my family
	Teachers	The thing is needed for the information
	Experts	I believe they know best
		They are the expert of it
		Because in other shops they show you the phone
		They have more knowledge about it
		Because experts know what they are talking about
	None	I trust the person and once used it
		I am the source
		Product has been reviewed
		You believe in a person you trust
		Because the information is about the source I want
		Because it give me what I need
		They learned for it

Scenario	Information channel chosen as most credible	Reason for choice given in pupils' own words
2. AIDS	Internet	I had to do it for a project
		They have more knowledge about it
		Any question has an answer in this source
		I believe the internet is the best
		It is safe
		It has a lot if information
		and you get anything from the internet
	Newspapers	They give you right information
	Teachers	Trusted
		They know more because they were/are trained for such
	Experts	Because he studied that certain thing
		The person has studied this virus before
		They know about it since they doctors
	None	Is because the thing I want is in that information
		We need to get rid of it immediately!
		You ask people or other teachers
		Because they are working with it
		I trust the source
3. Municipal politics	Internet	I do not really follow (Elections & Politics)
		It is safe
		I haven't used it before
	Newspapers	I'm not into politics
		They have more knowledge about it
	Television	I don't trust any of this
		I don't really care
		For some reason I don't really care about politics
		They show the thing that happens around the world
	Family	They know about which parties serve well
		They have voted before
		My family would suffer with me if I chose wrongly
		I trust them because they already voted before.
	Experts	I think they know what they want
	None	Is because has got what I want
		Trust

Scenario	Information channel chosen as most credible	Reason for choice given in pupils' own words
4. Movies	Internet	They have more knowledge about it
		Has a lot of information
		It is the only source which has relevant info
		It is safe
		You get more info about what happening
		This source has useful info about movies
	Books	You can read story books
	Television	To me it is always the best option for writing on movies
		It comes straight from what happened in the movie
		You can't get information for a movie it is obvious that you have watched the movie before
		You can watch the movie and get more info there
		Because the information is correct
		They usually play the trailer on TV

5. Tuberculosis	Internet	It is safe
		Questions can easily be found
		It is reliable
	Newspapers	They give right information
	Friends	Witnessed it
	Family	Because my mom is a nurse/doctor
	Experts	Know more cause they are trained (doctors & nurses)
		They are the experts
		Because they learnt about it
		They have more knowledge about it
		(Doctor) They have learnt about it
	None	Because we need to test that person by DNA test

6. Cell phone rates	Internet	They have more knowledge about it
		The best
		They know
	Magazines	It helps a lot
	Newspapers	Thay give write information
	Television	Because they sometimes tell you the truth
	Friends	It is because magazine make things more clear
	Family	I trust my family more
		It is safe
	Experts	Because I can talk to the shops owners
	None	Because it makes children confused about the cell phone
		Is because the information is from my teacher

Scenario	Information channel chosen as most credible	Reason for choice given in pupils' own words
7. Television talent show	Internet	So you won't be embarrassed
		They get information from the source itself and just quote it
		The internet doesn't lie
		They have more knowledge about it
		Trusted
		It is very trustworthy
	Newspapers	It is safe
	Friends	I would trust my friends and believe them about how to enter
	Experts	They are an expert of it
		I'd trust the person whom has entered before
8. Political party history	Internet	They know the info
		Get enough information
	Books	Very useful
		Because some books give you more infor
	Brochures	It is safe
	Newspapers	They have more knowledge about it
9. Open ended	Internet	It shows different web sites and views the info and books
		I did have money for after school studies
		They have more knowledge about it
		The best available
		History project. Looking at university inform
	Books	It is safe
	Brochures	I always get this at school
	Magazines	Cause I use different sources
		The write the info
	Family	I know what I do
		They help you
	None	I trust the info and I once used it

Table H.1 Additional reasons grouped by scenario

Further thematic analysis on the above data adds insight. It was found that the above reasons for selecting a particular information channel as most credible could be grouped into the following themes:

- The information channel itself is credible. This is a different slant to the option provided in the questionnaire of the **information** being credible.

- The **quantity** of information and the convenience of getting it. When compiling the questionnaire this was not considered to be one of the criteria for indicating information channel credibility.
- The people behind the information were perceived to be knowledgeable. This is a rewording of one of the options provided - *You trust the person(s) who supplied or created the information.*
- Previous usage. This is a rewording of one of the options provided - *You have used this source in the past and trust it.*

In table H.2 all the additional reasons are sorted according to the above themes. There is also an extra column for reasons which were not categorised in these themes. The reasons they could not be categorised under these headings are various: Some reasons are one of a kind. Some do not explain a reason for credibility perception. For some it is not clear what the pupils mean.

The reasons recorded in this appendix are discussed in greater detail in Section 5.8.1.

	The **information channel** itself is credible	Credibility is from the **quantity** of information and the **convenience** of getting it	The **people** behind the information were perceived to be knowledgeable	Previous usage	Other options
Internet	It is the only source which has relevant info This source has useful info about movies The best I believe the internet is the best. The best available It comes from the internet and most of the things are true It is safe It is safe It is safe It is safe It is safe It is reliable The internet doesn't lie It is very trustworthy Trusted	Because it has a lot of information Any question has an answer in this source It has a lot if information and you get anything from the internet Has a lot of information You get more info about what happening They have more knowledge about it It shows different web sites and views the info and books Get enough information Questions can easily be found	Because he or she knows how to use it They are experts and know what they are doing They have more knowledge about it They have more knowledge about it They get information from the source itself and just quote it They have more knowledge about it They know They know the info They have more knowledge about it	I have used it in the past	I had to do it for a project I do not really follow (Elections & Politics) I haven't used it before So you won't be embarrassed I did have money for after school studies History project. Looking at university inform
Books	Very useful It is safe	Because some books give you more infor			You can read story books

	The **information channel** itself is credible	Credibility is from the **quantity** of information and the **convenience** of getting it	The **people** behind the information were perceived to be knowledgeable	Previous usage	Other options
Brochures	It is safe	I always get this at school			
Magazines		Cause I use different sources[36]	The write the info		

[36] This appears to be referring to the quantity of sources

	The **information channel** itself is credible	Credibility is from the **quantity** of information and the **convenience** of getting it	The **people** behind the information were perceived to be knowledgeable	Previous usage	Other options
Television	It is most trusted They give you right information Because they sometimes tell you the truth To me it is always the best option for writing on movies It comes straight from what happened in the movie You can watch the movie and get more info there Because the information is correct They usually play the trailer on TV They show the thing that happens around the world				Only the best phones are advertised on T.V (I believe) I don't trust any of this I don't really care For some reason I don't really care about politics You can't get information for a movie it is obvious that you have watched the movie before
Newspapers	They give you right information They give right information It is safe		They have more knowledge about it They have more knowledge about it		I'm not into politics

	The **information channel** itself is credible	Credibility is from the **quantity** of information and the **convenience** of getting it	The **people** behind the information were perceived to be knowledgeable	Previous usage	Other options
Friends			I would trust my friends and believe them about how to enter	Witnessed it	It is because magazine make things more clear
Family	It is safe		Because I trust and believe my family They know about which parties serve well Because my mom is a nurse/doctor I trust my family more They help you	They have voted before I trust them because they already voted before.	I know what I do My family would suffer with me if I chose wrongly
Teachers			They know more because they were/are trained for such Trusted		The thing is needed for the information

	The **information channel** itself is credible	Credibility is from the **quantity** of information and the **convenience** of getting it	The **people** behind the information were perceived to be knowledgeable	Previous usage	Other options
Experts			I believe they know best They are the expert of it They have more knowledge about it Because experts know what they are talking about Because he studied that certain thing The person has studied this virus before They know about it since they doctors I think they know what they want		Because in other shops they show you the phone

Table H.2 Thematic analysis of additional reasons for choice of most credible information channel

APPENDIX I: OPEN-ENDED SCENARIO TOPICS

When the survey was being constructed, there was concern that while half of the scenarios were deliberately structured to be self-generated, any task set by someone else cannot by definition be genuinely self-generated. Thus an extra open-ended scenario was included to be a "truly self-generated" task (see scenario 9 in questionnaire in Appendix A). The wording used in the questionnaire was "Write down a situation in the last six months where you needed to find information." It was evident from the formulation of pupils' responses that many of these information needs were in fact tasks set by the school. The topics are listed in alphabetical order as stated by the participants.

Accounting project
Afrikaans essay
AIDS project
Alexander Fleming
Apply to new school
Basketball
BBBEE
Blocking WiFi hacking
Body
Book review
Breast cancer
Budget speech
Business project
Cancer in the womb
Career and personality traits
Career and university info
Career chiropractor
Cell phone purchase
Choosing a car
Clothes
Conspiracy theories
Contraception
Cricket batting technique
Dancing competition
Decorate bedroom
Depression and self esteem
Design project for school
Diamond discovery
Drake
Drugs and alcohol
Ebola
English project

Farewell party dress
Fastest car
Flight MH 370
Foreign exchange information
Geography assignment on Africa
Going out at night
Gold discovery and history of mining
HIV/AIDS project
How to study for Maths
How to be a better soccer player
How to get on with a particular difficult peer
How to get over an ex
How to get rid of black spots on face
Humanities project
Humans
Increase sprint speed
Information on a book
Kim Kardashan
Leg injury
Life Orientation assignment
LO how to get a baby
LO task on stress
Local tourist attractions
Lowveld High
Lung problems
Make ginger beer
Malaria
Medical – thrush
Models
Money acts
Movies
Netball match info

New school
New school and clothes
Neymar de Silva
Physical exercise
Pitch perfect
Plane and train tickets
Playing tennis
Political info
Problem with knee
Public speaking topic
Read on-line books
Relationship help
Researching style and content of exam papers
Ronaldo soccer boots
Ronaldo's career
Roofs
Rugby academy information

SANDF career info
School swimming gala
School project
Soccer statistics
Self-esteem evaluation
Shopping
Soccer boots
Technology project
Tourism project
Trade union information
Unemployment rate
University application
When was money invented
Where my dad came from
Why learners shun Maths
World War I
Xenophobia

APPENDIX J: EXPLANATION OF DECISION TREES

In Section 5.4.1.1 to 5.4.1.8 decision trees are used. The purpose of this appendix is to explain the principles on which the analysis is based.

A decision tree is a widely used data mining technique which is the process of collecting, searching through and analysing a large amount of data in a database so as to discover meaningful patterns or relationships. An explanation of the technique can be found in the software developer's web site: Partition models: Use Decision Trees to Explore and Model Your Data. [online] http://www.jmp.com/support/help/Partition_Models.shtml (checked 11 September 2016)

A decision tree model allows one to develop a classification system that predicts or classifies future observations based on a set of decision rules. If data can be divided into classes one can build rules to classify a pupil. The decision tree will then provide different profiles of pupils who choose particular options or not.

The value of the decision tree is that it accounts for the interaction between the independent variables and the complexity of building a model with many independent variables and offers a high level of interpretability.

A decision tree is a special form of tree structure. The tree consists of nodes where a logical decision has to be made and connecting branches that are chosen according to the result of this decision. The nodes and branches that are followed constitute a sequential path through a decision tree that reaches a final decision in the end.

Each node represents an independent variable in the dataset. Decision trees are generated from the data in a top-down direction. The root node of a decision tree is the tree's initial state - the first decision node. Each node in a tree contains some data. On the basis of an algorithm the decision is made to split the node into branches. The most important independent variable will be used to create the first split by using certain criteria. The process is repeated until a complete tree is obtained. In some cases, the node cannot be split further. In this case it will be the final decision node. The tree can be too large, with many small nodes that do not contribute much to the fit and are too specific. This is called over-fitting. Stopping rules are used to avoid over-fitting.

Stopping rules

- The G-square measure of variability is used as a stopping rule.
- If the improvement in the fit by splitting again is minimal, a stop rule is applied.
- A node with fewer than 10 learners is not split further.

Two measures are provided by the analysis by which to assess whether the model is a good fit of the data. The R^2 gives the percentage of the variation that is accounted for by the tree model. Typically in human sciences R^2 values are low because of the complexity of human nature, as well as all the factors influencing human nature. Therefore these models will be used to assess general patterns **statistically**, which must then make sense logically for the model to have value. Another measure is the misclassification rate, which measures the percentage of data misclassified by the model.

The statistics package SAS JMP version 12 enables researchers to use decision trees to analyse participants' choices in order to be able to identify their predominant profile. The decision tree procedure identifies the choices with the greatest significance at each level and presents these. One such output of this analysis is shown in Figure J.1 and is explained as a template for all the other decision trees in the text.

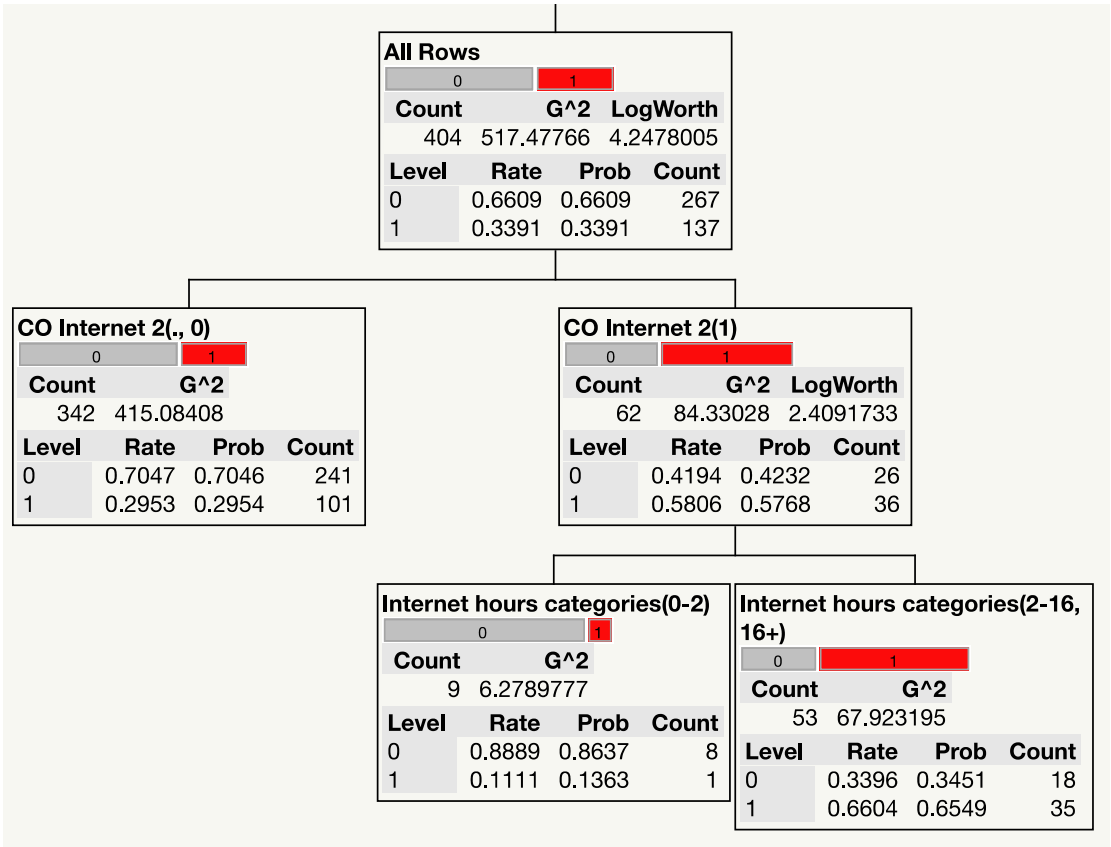
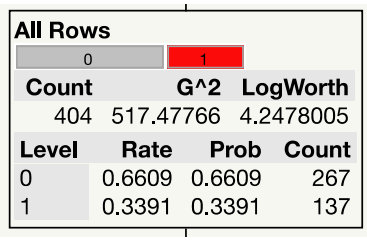


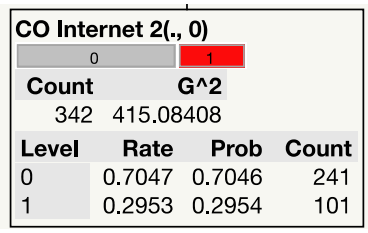
Figure J.1 Decision tree with an initial state of pupils choosing the internet as the most credible channel

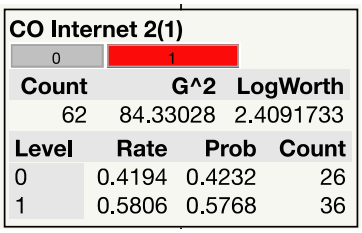
In the text that follows, each of the boxes will be explained in turn, culminating in an explanation of the overall profile.



The tree represents the analysis of a situation where pupils were given a choice of information channels for a particular need. They had to select the most credible information channel. In this example there were 404 pupils who responded to this question. Of this group, 137 chose the internet as the most credible information channel (indicated as Level 1) and 267 did not choose the internet (indicated as level 0). The probability of each of these choices is calculated (267/404 = 0.6609 and 137/404 = 0.3391). The G^2 and LogWorth values are the statistic by which the package identifies the components that have the greatest impact on the profile.

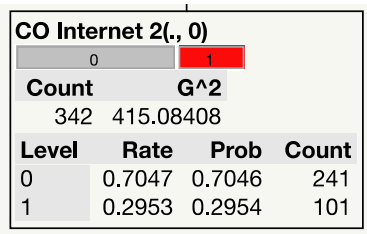
The scenarios for which the information needs were set covered reference information, commercial information, leisure information and current affairs. The next level of the table looks across all the scenarios and identifies that, of the types of information, commercial information had the greatest significant relationship on the profile of the pupil choosing the internet as the most credible information channel in this scenario.



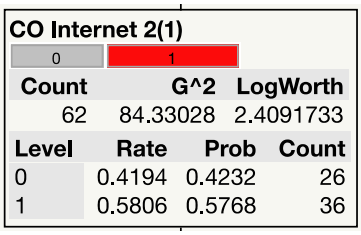


Looking at the top row of each box, the label “CO internet” is for pupils’ choice of the internet for ALL commercial information needs (not just this scenario). The 0 category reflects pupils who did not choose the internet as the most credible information channel and for commercial information needs while the 1 category reflects pupils who did choose the internet as the most credible information channel and for commercial information needs. Sometimes a dot is grouped with the 0 (.,0). The dot represents pupils who left this answer blank. Of the original 404 pupils answering this question, 342 of the pupils did not choose the internet as the most credible information channel for commercial needs, while 62 did choose the internet as the most credible information channel.

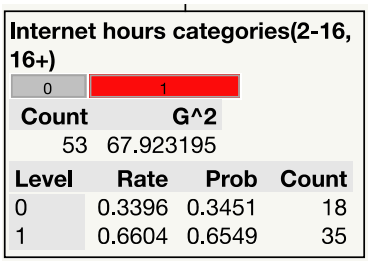
Looking at just the first commercial information box (i.e. of scenarios involving commercial information where pupils did not choose the internet), out of a total of 342, 241 had not chosen the internet as the most credible information channel in the original scenario and 101 had.



The other commercial box covers the 62 responses that involved commercial information. Of these, 36 had chosen the internet as the most credible information channel for the original scenario.



However the statistical package continues the process and in analysing data for pupils who use the internet two or less hours a week and those who use it for more than two hours, identifies that of these 62 pupils, 35 had originally chosen the internet as the most credible information channel.



From the decision tree illustrated above, the profile of a pupil with the greatest likelihood to perceive the internet as the most credible information channel for this scenario is a pupil who also chooses the internet for other commercial information needs **AND** who uses the internet more than two hours a week. The rate is 66.04% (35/53) compared to the overall rate of 33.91% from the top box in the tree, which represents the rate without narrowing the field to account for the factors most closely associated with this choice. The R^2 value indicates that only 5.44% of the variance is accounted for by the model, which is not a particularly good fit. The misclassification rate is 29.70% (120/404).

The result of this statistical process is thus a step-by-step narrowing of the field till one can identify the profile of a typical pupil choosing the internet as the most credible information channel for this particular information need.

APPENDIX K: EXPLANATION OF CONTINGENCY TABLES

In Section 5.4.1.1 to 5.4.1.8 contingency tables are used. The purpose of this appendix is to explain the principles on which the analysis is based.

When one wishes to test whether there is dependence between two variables, the chi-squared test can be applied. Table K.1 shows a simplified contingency table with two variables. The values in the table are given as percentages.

		Variable 1		
		Value x	Value y	Total
Variable 2	Value a	ax%	ay%	
	Value b			
	Value c			
	Total	x%	y%	

Table K.1 Schematic contingency table

If the variables are independent one would expect the ratio along each row to match that of the total row. If this is not the case then one would suspect the variables have some kind of influence on each other (i.e. they are not independent). Similarly, the proportions down a column should match the proportions down the total column. It is this association that the chi-squared test measures.

Table K.2 is a contingency table shown to illustrate the data on which the statistics package SAS JMP version 12 works. (It is just a copy of contingency table 5.15). This table for a particular scenario shows the number of pupils choosing the internet as the most credible information channel, as well as the number selecting the three levels of risk perception. Table K.2 shows the proportions of these variables.

N=319		Internet **not** chosen	Internet chosen	Total
Risk low (1)	Count[1]	45	14	59[2]
	Total %	14.11[4]	4.39	18.50[7]
	Col %	22.28[5]	11.97	
	Row %	76.27[6]	23.73	
Risk medium (2)	Count	58	32	90
	Total %	18.18	10.03	28.21
	Col %	28.71	27.35	
	Row %	64.44	35.56	
Risk serious (3)	Count	99	71	170
	Total %	31.03	22.26	53.29
	Col %	49.01	60.68	
	Row %	58.24	41.76	
Total	Count	202[3]	117	319
	Total %	63.32	36.68	

Table K.2 Contingency table explanation

The superscript numbers shown in Table K.2 are used below as the basis to explain relevant features of the contingency table.

1. The Count numbers are the number of pupils who selected a particular combination. For example, 45 pupils who considered the risk for this scenario to be low (1) also did not select the internet as the most credible information channel. These figures come directly from the raw data of the survey results.
2. Total is the sum of the row.
3. This total is the sum of the column.
4. Total % in each cell is the count value divided by the total number of pupils who responded to this question (319 in this example).
5. Col % in each cell is the count value divided by the total number in that column (in this example 22.28 = 45/202).
6. Row % in each cell is the count value divided by the total number in that row (in this example 76.27 = 45/59).
7. The Total % for a row would be exactly the same as the Column %, as both would be divided by the total at bottom (319 in this example)

The way this data is presented enables one to compare the percentages along any row visually with the percentages along the Total row at the bottom. Similarly, one can compare the percentages of any column with the percentages of the Totals column on the right of the table.

To determine if the association is statistically significant, the Pearson chi-squared test was conducted. The results revealed that there was a significant association between the two variables (Chi square value = 6.202, df =2, p=0.0450). Thus one can say that there is a statistically significant dependence between pupils' choice of the internet as the most credible information channel and their perception of the risk. The Chi square test indicates that there IS dependence between the variable but not WHAT the relationship is. It is important to note that the number of participants in this empirical survey is large; there is therefore an increased tendency to get significant results from this test and thus results must be cross-referenced to make logical sense.

Once it has been ascertained that statistically there is dependence (i.e. the pupils' choice of the internet and their perception of the risk of using incorrect information influence each other) it is useful to look at where the effects are. (The following two tables are not labelled, as they are simply a highlighted copy of table K.2) This perspective considers the bottom two rows of the table

N=319		Internet **not** chosen	Internet chosen	Total
Risk serious (3)	Count Total % Col % Row %	99 31.03 49.01 58.24	71 22.26 60.68 41.76	170 53.29
Total	Count Total %	202[3] 63.32	117 36.68	319

When the risk is perceived as HIGH (3) a higher proportion of pupils choose the internet as the most credible information channel than the overall group (41.76% instead of 36.68%). Similarly the proportion **not** choosing the internet is lower (58.52% instead of 63.32%).

One can also look down the columns.

N=319			Internet chosen	Total
Risk low (1)	Count[1]		14	59[2]
	Total %		4.39	18.50
	Col %		11.97	
	Row %		23.73	
Risk medium (2)	Count		32	90
	Total %		10.03	28.21
	Col %		27.35	
	Row %		35.56	
Risk serious (3)	Count		71	170
	Total %		22.26	53.29
	Col %		60.68	
	Row %		41.76	

For low perceived risk the proportion choosing the internet is lower than overall (11.97% compared to 18.50%), whereas for a high perceived risk the proportion is higher than overall (60.68 compared to 53.29).

Either way, whether one looks along the row or down the column, it is possible to see that when the risk is perceived as high, a greater proportion of pupils choose the internet.

APPENDIX L: TABLE OF STUDIES REFERRED TO IN SURVEY

Table L.1 is a summary of the empirical research studies referred to in the text. The purpose of this table is to inform methodology discussed in Section 4.3

Study	Target	Method	Categories / context	Comments
Agosto (2002)	11 female students from grades 9 and 10	Participants examined a set of preselected web sites. They were then asked to assess the sites' credibility. Group interviews were used.	Science and technology related sites.	Girls gave the "right" answers about credibility assessment but did not do them.
Agosto & Hughes-Hassell (2005)	27 urban youth aged 14-17	Qualitative data from written surveys, audio journals, interviews and activity logs	Everyday life information seeking.	Friends and family were the preferred source of information. Participants were negative towards libraries.
Bates *et al*. (2006)	519 adults recruited from the street, a parking lot and a community centre	Participants were given identical information purporting to be either from highly credible sources or simply of unknown origin. Participants evaluated the trustworthiness, truthfulness, readability and completeness of the information on a scale of 1-7	Health issues – lung cancer.	Credibility of the information channel was found to be irrelevant to participant's perceptions of the quality of information.
Biddix, Chung & Park (2011)	282 college students	Open-ended questionnaires	Coursework assignments	Students prefer the internet to libraries.
Bowler (2010a)	Ten adolescents	Qualitative study of thinking and emotions during researching for a school-based task.	School-based information task on Western civilisation.	Pupils' curiosity during search led to pleasure and frustration, which needed to be self-managed for search success.

Study	Target	Method	Categories / context	Comments
Bowler (2010c)	Ten adolescents	In a case study, naturalistic methods were used.	School-based information task on Western civilisation.	Found information seeking is a complex process with adolescents requiring metacognitive knowledge.
Bruce *et al*. (2003)	Two teams of design engineers using collaborative information seeking	Tape recorded team meetings and interviewed team leaders.	Design projects.	Participants sourced most of their information from other people (both inside and outside of their teams).
Carpenter *et al.* (2011)	232 patients with rare diseases	Online questionnaire used to get patients to rate their perception of the credibility of information sources. Multivariate analysis of co-variance was used to analyse results.	Rare diseases	Patients used and found physicians and the internet to be most credible sources. Gender differences noted – males used spouses more and found them more credible than females did.
Case *et al*. (2004)	882 adults randomly selected	Asked about preferred channel of information if seeking information on genetic diseases and testing.	Health issues	Information channel preference was firstly the internet, then doctors, then the library.
Cassidy (2007)	655 journalists	Participants asked for assessment (Likert scale of 1-7) of believability, fairness, accuracy and comprehensiveness of news on the internet when gathering information needed in day-to-day job.	Perception of online news credibility	Online journalists found online information more reliable. Adversarial journalists had a negative perception of online information.
Chatman (1996)	People considered to be information-poor Three separate surveys covering janitors, single mothers and old ladies	Interviews with individuals on actual information problems they experienced.	Employment, health	Uses the term "outsiders" for information-poor people on the outside of conventional societal structures. Concepts relevant to current study covered by Chatman are risk, secrecy, deception and context.
Dorsman, Bekkers & Edwards (2015)	Three Dutch online forums	Analyses expert knowledge, common knowledge and how it affects policy assumptions.	Swine flu	Policy making needs to take account of online forum perceptions of risk.

Study	Target	Method	Categories / context	Comments
Duffy, Liying & Ong (2010)	150 Singaporean teenagers	Analyse how and why they use certain sources for certain types of information. Questionnaire asked for • Information needs • Choice of media to meet needs • What influences choices • Online vs offline attitudes • Attitude towards generational ownership of media • Academic credentials	Current affairs Entertainment Leisure Sport School tasks	Information sources classified as online and offline Content more important than platform Offline was considered as more reliable for current affairs Online was preferred for entertainment and leisure because reliability not as important.
Ek, Eriksson-Backa & Niemelä (2013)	Finnish adults aged 18-65	Two groups eight years apart. Compare the use and trust of health information on the internet.	Health information	Huge growth in use and trust of the internet for health information, however, many (1/3) still do not use the internet for health information (and hence are unable to assess the reliability of the information).
Flanagan & Gallay (2008)	1 670 pupils from USA school classes were selected by a pool of teachers who had expressed interest in an internet-based election syllabus	Measuring effect on trust of social studies course over a semester. Measured at beginning and end of a semester. Pupils were given a combination of open-ended questions and Likert-type items answered in a 45-minute period.	Trust in media, people, politicians, government.	Trust in media dropped significantly over the semester.
Flanagin & Metzger (2000)	Adults – mostly undergraduate students + general public. 1 500 in total	Participants filled in a survey form asking them to rate on a scale of 1-7 media credibility and then to indicate how they considered each of 9 aspects of verification on a scale of 1-5 (author, contact details, qualifications, goals, current, other sources, official stamp, fact/opinion, completeness).	The study cross-referenced media (newspapers, magazines, radio, television and the internet) with information types (news, reference, entertainment, commercial)	Newspapers were considered by participants to be the most credible media.

Study	Target	Method	Categories / context	Comments
Flanagin & Metzger (2011)	Two groups – 11-18-year-olds and adults	Survey. Same information given purporting to be from either Wikipedia or Encyclopaedia Britannica. Perceived credibility assessed.		Perception of Britannica information credibility higher than Wikipedia. Use of Wikipedia is common but many adults do not understand how information was provided. Participants trusted Wikipedia but doubted the appropriateness of this trust.
Fogg *et al*. (2002)	2 684 adults from the general public evaluated commercial web sites. Participants were recruited via charities that received a donation for every completed evaluation	Participants were asked to compare the credibility of two web sites. Filled in online form. Answers were compared with criteria given in another survey (Princeton Survey Research Associates, 2002) as to what indicates credibility.	E-commerce Entertainment Finance Health News Non-profit Opinion or review Search engines Sports Travel	Participants rated the design and look as the most important contributor to their assessment of credibility. Next most important was the information structure. This did not correlate with findings from Princeton Survey Research Associates (2002), which found that who runs the site, contact detail and privacy policy were claimed to be important.
Francke & Sundin (2012)	Upper secondary school teachers and librarians in Sweden	Focus group interviews followed themes: How critical evaluation is taught. Pupils' difficulty with print media architecture. Credibility of Wikipedia.	Credibility of the source Corroboration of other sources Credibility is situational not absolute Democratic production	Concern was with the credibility of participatory media.
Gauld & Williams (2009)	406 Australian and New Zealand users of internet health information	Regression analysis used to analyse results	Emailing doctors Internet searching Taking internet information to doctor Information reliability	There is a gender effect Higher education level leads to greater evaluation of information credibility

Study	Target	Method	Categories / context	Comments
Gray *et al*. (2005)	157 English-speaking adolescents aged 11-19 from USA and UK	26 single-gender focus groups discussing sources of health information.	Previous experience Saliency of the information Credibility of the source	The internet reported by many as primary general information source. Online sources could provide empathy while pupils could still control amount of disclosure.
Gross (1999)	Junior school library users from three USA schools (includes use by adults). 369 interactions analysed	Quantitative – record all activities in library – librarian asked pupils for their details and characteristics of the task. Qualitative – interviewed 16 pupils and eight teachers to assess the effect of whether task was imposed or self-generated.	Imposed and self-generated searches.	Participants used a wider variety of sources for imposed queries than for self-generated questions.
Gunter (1992)	Random selection of 985 adults	Initial random telephone call to record demographic information. Mailed questionnaire assessing participants' perceptions of the credibility of various media. Choice from "too favourable", "just about right", or "not favourable enough".	Mass media, newspapers.	Survey did not aim to assess the information channel but rather people's perceptions of the channel. People's trust is dependent on involvement in the subject and group into which they fall.
Harris, Sillence & Briggs (2011)	561 adults who had searched for health information	Participants asked to recall a site they had used and answer online questionnaire on it.	Information quality Personalisation Impartiality Credible design	Adding health-related variables (threat appraisal, information and corroboration) improved the predictive ability of the model.
Hertzum *et al.* (2002)	Software engineers E-commerce web site users		People Documents Virtual agents	E-commerce users react strongly to visual appearance of sites. Engineers use known sources. Outside of this they are cautious.

Study	Target	Method	Categories / context	Comments
Helligoss & Rieh (2007)	24 undergraduate students, reporting on 245 information seeking activities	Participants kept a diary of one information seeking activity per day for 10 days. They were later individually interviewed about credibility perceptions and how information was assessed.	Considered any information need, including imposed and self-generated information needs and any information channel.	No mention of credibility while seeking information to avoid influencing behaviour. Only brought up at interview. Developed a model of credibility judgments, influenced by 3 layers (construct, heuristics and interactions), all of which occur in a given context.
Huston, Jackowski & Kirking (2009)	765 women from 45-61 years old		Trustworthiness Knowledge Helpfulness Bias Vested interest	Physicians rated top information source because of trustworthiness, helpfulness and knowledge. Perceptions varied with participants' own health status
Julien (1999)	400 Canadian adolescents	Written questionnaire	Helpfulness of sources of information for career decisions. Barriers to information seeking	Youth do not know where to look Too many places to look Questioned credibility of sources
Levin, Whitener & Cross (2006)	88 employees from three different companies: a USA pharmaceutical company, a British bank and a Canadian oil and gas company	Questionnaire in Excel. Sent out via email attachment, which was returned directly to researchers.	Participants asked to document recent best two knowledge seeking activities and worst two.	Only asked for interpersonal sources. Findings used to develop a model explaining perceived trustworthiness as a function of demographic similarity, trustworthy behaviour, shared perspective and relationship length.
Lu & Yuan (2010)	149 educators working for the extension office of a large USA university. They were based in 58 counties.	Participants recorded extent of recent information needs on either a hard-copy survey or an electronic version. Participants to choose between 8 given information channels – 4 non-relational and 4 relational channels.	Chosen by participants from recent information needs.	Choice between information quality and accessibility in selecting an information channel is not based on type of information need but rather on extent of the need.

Study	Target	Method	Categories / context	Comments
Lumsden *et al*. (2015)	72 medical students	Completed an electronic questionnaire to determine how medical students assess online resources.	Accuracy, authority, objectivity, currency, coverage	Objectivity and currency were most used criteria.
Madden *et al*. (2012)	48 postgraduate students	Carried out a series of searches over web sites, forums and electronic books. Participants asked to "think aloud" and explain strategies.	Purpose of the search Advice from lecturers Perceived nature of web site	Study was to determine levels of metacognition involved in evaluating web sites. Criteria applied at different stages of the search process.
Madden, Ford & Miller (2007)	107 UK school pupils, aged 11-16	Participants ranked the usefulness of information resources from a given list. Researchers checked later in the year if actual use correlated with original ranking. Group discussions were the means of obtaining the data.	General school homework.	Found use of face-to-face interaction with people declining as pupils got older and tasks more specialised. The internet was generally perceived to be useful but underutilised relative to interpersonal sources.
Marton (2003)	265 adult women recruited online	Participants filled in an online questionnaire choosing from 13 options of preferred information sources covering internet-based, print-based, electronic mass media and people as a source.	Women's health.	Health care practitioners, books and pamphlets/fact sheets received high ratings on both perceived relevance and reliability. Web sites received favourable ratings on relevance but intermediate ones on reliability.
Metzger, Flanagin & Zwarun (2003)	**First study** 356 undergraduate students from a public USA west coast university	Questionnaire – with open-ended questions about the internet use in both academic and personal capacity.	Entertainment Non-academic research News Business.	Participants were also questioned on their use of the internet, books, academic journals, magazines and newspapers.
Metzger, Flanagin & Zwarun (2003)	**Second study** 436 students 307 others recruited by snow-ball sampling where each recruit had to recruit five more participants	Questionnaire covered a comparison of students' vs non-students' credibility perceptions of media, information types as well as verification of information.	News Entertainment Reference Commercial.	Both groups did not perceive the internet as credible but still did not verify information. They perceived newspapers, television and magazines to be more credible than the internet.

Study	Target	Method	Categories / context	Comments
Meyer (2003)	Rural famers	Observation of rural famer training which involved metaphors, storytelling, demonstrations and repetition. Success of the training methods and hence indirectly of the perceptions of credibility was measured by the growth in group size as well as food security.	Maize growing.	People from an oral culture respond positively to presentation of information in a manner corresponding closely to their traditions.
Miller & Bell (2012).	Nationally-representative sample of 3 796 adults (USA)	Used data from the Health Information National Trends Survey	The trust of internet sources of medical information.	Found that trust and age of information seekers were positively correlated.
Petty & Cacioppo (1986)	Undergraduate university students	The relevance of information, expertise of the presenter and the strength of the argument were assessed with respect to the level of persuasion. Students were presented with various scenarios and then given a short time to record the attitudes invoked.	Persuasion.	Three factors were assessed. In the analysis one factor was held constant and the other two factors graphed against each other.
Rieh (2002)	15 lecturers and doctoral students from diverse disciplines at a USA university	Laboratory setting where search logs, think-aloud protocols during searches and post-search individual interviews were used. Scenarios posed were a general spread from their own research project, travel information, an uncommon disease and information about purchasing a personal computer.	Research Medicine Travel Computers	Concern was noted that where interest in information credibility was expressed it could have been the result of leading questions. Influence of context on participants' assessment of information credibility was recorded. Both the predictive and evaluative decisions about information quality were observed.
Savolainen (1995)	11 working class adults, 11 professional adults (teachers)	1½ hour individual interview on what their information seeking activities were.	This study covered non-work-related information needs – i.e. self-generated.	Working class tended to spend more time in passive absorption (television), while professionals were more active in seeking information.

Study	Target	Method	Categories / context	Comments
Savolainen & Kari (2004)	18 volunteers aged 10-70. Recruiting method favoured internet users	Semi-structured interviews were conducted where participants were asked to list their information channels of choice.	Self-development was the criterion and thus in this study, covered hobbies and recreational studies.	The choice of information channel was based on participant's expectations of the value of that channel. Participants tended to use few information channels, favouring the familiar and easily accessible channels. Horizon concept ranks sources and channels on accessibility and quality. Top choice was human sources, followed by print media and then networked sources.
Shen, Chiou & Kuo (2011)	5 013 samples from eBay transactions	Set a filter on eBay to harvest data for completed laptop transactions.	Online auction sales of laptop computers.	Seller reputation, product condition and argument quality influence number of bids, auction success and willingness to pay.
Shenton & Dixon (2004)	188 pupils aged 4-18	12 focus groups (6 pupils in each) and 121 individual interviews. Participants were interviewed on a recent information need – home or school.	Open for pupils' choice of a recent information need.	Participants tended to stop when they had found sufficient information by minimum effort. Quality assessment was by relevance and quantity and seldom did they check accuracy.
Spink & Cole (2001)	300 heads of poor households in Texas	12-page questionnaire filled in by interviewer.	News, security, health, education, employment.	Authors found factors relevant to the information behaviour of this group to be the source of the information, the actual message, the channel through which information came and finally the characteristics of the receiver.
Sundin & Francke (2009)	A class of Swedish upper secondary high school pupils	Observation, interviews and information seeking diaries	User-created information (Wikipedia)	Pupils made decisions normally used for traditional information sources, which made them unsure of Wikipedia information credibility.
Walraven, Brand-Gruwel & Boshuizen, (2009)	23 grade 9 Dutch pupils – mean age 14	Teachers created 12 information tasks that needed to be researched on the internet. Pupils chose two tasks to research. After having solved them, group interviews were conducted about information credibility assessment.	Four physics, four geographic and four language and culture tasks.	Although the pupils did not assess the credibility of their information sources, in the group interview they gave the "right" answers as to what they "should" have done.

Study	Target	Method	Categories / context	Comments
Whitmire (2003)	20 senior undergraduate students	Participants were interviewed individually on their current major research project. They were questioned on information seeking practice but in the interview questions were embedded to determine their epistemological philosophy.	Humanities, social sciences and the natural and applied sciences.	Useful contribution of this study is the idea of embedding questions to participants without making it the focus of an interview.

Table L.1 Summary of selected empirical studies on information behaviour