Features of at-risk teens' new literacy practices

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1. Introduction

There is concern over the growing role new media play in our lives, especially in the lives of young people (Moje et al. 2008). Young people are usually first to adopt new technologies. They have fewer already-established patterns and routines of daily life, which allows them to be more flexible and creative users of new media (Livingstone 1999). Young people's warm embrace of new media causes parents, educators and policy makers to raise questions regarding the implications for their educational development. Perhaps the most important educational issue concerns what exactly is lost when written media are replaced by new media. Goody & Watt (1963: 321) believe that "writing establishes a different kind of relationship between the word and its referent, a relationship that is more general and more abstract, and less closely connected with the particularities of person, place and time". This quality of the written language fosters distance and a critical attitude. Another school of thought tells us that such qualities are not in principle exclusive to the written word, but that they are mostly associated with it. Wells (1981) explains that written language promotes a more detached and critical attitude, but adds that this depends on the uses and functions to which it is put. The type of literacy that is concentrated in books is not exclusive to this medium and may also come from conversations on the street, lectures, and political rallies.

Electronic media allow for the type of experience that is usually gained from books, but it is debatable whether young people actually use new media for so-called 'epistemic' purposes. In a large study recently conducted among 1561 Dutch adolescents from all educational tracks, Duimel & De Haan (2007) find that teens use the internet mostly for communication and entertainment purposes. Duimel & De Haan also find that there are differences between teens from lower and higher educational tracks. Teens from the higher educational tracks use the internet more often as an information medium, whereas teens from the lower educational tracks use the internet more frequently for entertainment purposes, for instance gaming. Similar results are found by Livingstone & Bober (2005) and Peter & Valkenburg (2005). This suggests that a new digital gap is opening up with the locus of inequality shifting from technology access to quality of use (Livingstone & Bober 2005: 12).

Insights into teens' new media use are particularly relevant in light of the finding that large groups of students in secondary education are at risk of lags in reading and writing development (OECD 2001; Dagevos et al. 2003). In the current paper, features of new literacy practices of such teens are investigated. The study is part of a larger project, *Project SALSA*, a combined effort of the universities of Amsterdam and Utrecht. *Project SALSA* aims to identify those factors which promote and impede the literacy development of at-risk students in the lower tracks of prevocational education (i.e., v*mbo-basisberoepsgerichte leerweg* and *vmbo-kaderberoepsgerichte leerweg*).

2. Theoretical background

2.1. Towards defining literacy

Our understanding of literacy is lost in obscurity because different definitions have been competing with each other. Traditionally, literacy is conceived as a set of skills. Newer views

of literacy emphasize its social nature, claiming literacy is more than being able to read and write; it's the ability to apply these skills for specific purposes in specific situations. The nature of the particular practice determines the skills involved. (Scribner & Cole 1981) Other scholars approach literacy as an even broader construct, also comprising particular forms of oral language use (Heath 1984; Olson 1991; Ravid & Tolchinksy 2002). Recently, definitions of literacy have been adapted to include new media (Anderson & Stokes 1984; Chandler-Olcott & Mahar 2003; Lankshear & Knobel 2006; Purcell-Gates 1997). As literacy conceptions have evolved, definitions have become broader, fuzzier and more elusive. Today the question remains: If literacy is more than one particular set of reading and writing skills, then what more exactly is literacy? Is it possible to identify a set of features distinguishing literate from non-literate activities?

At the heart of these questions lies the assumption that it is, in principle, possible to identify conditions which are (individually) necessary and (combined) sufficient to demarcate a category. Wittgenstein (1984) argues against this idea. In a famous treatise on games, he shows that there is nothing all games have in common. Some games involve winning and losing, but not all; some are entertaining, but not all; some require skill or luck, but not all. This leads him to claim that the term does not admit a full and complete definition. Rather, games hold certain similarities with each other, which Wittgenstein calls 'family resemblances'. There are two important lessons to be drawn here. First, members of a family may resemble one another but there does not have to be any set of features that they all possess. Second, as a consequence of this not all members have the same status, i.e. only some are prototypical of the category.

How can we incorporate these two insights in a definition of literacy? Chafe (1984) provides the tools for doing so. He distinguishes between two dimensions crucial to discourse types, formality and modality, which both envelop two subcategories, informal/formal and spoken/written. Combining the subcategories of these dimensions yields four discourse types:

a) informal spoken language (e.g. trivial conversations)
b) formal spoken language (e.g. lectures)
c) informal written language (e.g. instant-messaging)
d) formal written language (e.g. books)

In this setup there are discourse types which have no features in common, namely (a) and (d) on the one hand and (b) and (c) on the other hand. In addition, there are discourse types which are more prototypical of literacy. In this case, discourse type (d) is most characteristic of literacy while (b) and (c) are less so, and (a) is usually considered to be non-literate in nature. In the real world it is often difficult to see how one can draw a rigid line between literate and non-literate activities. Chafe's approach is able to deal with that difficulty because it is flexible. At the same time it retains explanatory power, because it shows to what extent activities are different or alike in their literacy content. Its flexibility and clarity makes it an alluring approach to defining literacy. However, we should bring it up to current standards, meaning that we should incorporate new insights into the nature of literacy.

2.2. Features of literate activities

In the introduction a distinction was made between the effects of the medium itself and the effects of the way it is used. The dichotomy proposed by Chafe can be understood in a similar vein. The modality feature is closely connected to the type of medium used, but formality is a function of the uses to which technology is put. Tannen (1982: 18) explains that "the

difference between features of language which distinguish discourse types reflects not only – and not mainly – spoken vs. written mode, but rather genre and related register, growing out of communicative goals and context.". Our aim here is to disentangle the features relevant to this discussion, features associated with medium type as well as features underlying formality.

Modality

We have moved from an age of unmediated communication to a literate culture and finally a culture of electronic media (McLuhan 1964). Each revolution has meant a change in the mode of communication. Face-to-face interaction allows for different sorts of input at one and the same time. Old media (print, telephone, radio) typically break these integrated modes down into single modalities, for instance text *or* oral input. New media (television, internet media) allow users to combine multiple modalities once again, such as sound, image, *and* written text.

Spatial-temporal distance

Different types of medium allow for different sorts of spatial-temporal arrangements. In face-to-face contact speaker and hearer are present at the same time and place. In contrast, an author and his readers are as a rule displaced in time and space (Chafe 1984). New media blur these distinctions because they allow for sender and receiver to be present at the same time but at another place (Croteau & Hoynes 2000).

Passive consumption vs. productivity/interactivity

Mass media are decidedly one-way in nature since they are not amenable to direct feedback from receivers (Croteau & Hoynes 2000). New media are different in this sense. Not only do they shape the relation between users differently, but also the relation between the user and the medium. They allow users to directly intervene in and change the images and texts that they access (Lister et al. 2003; Livingstone & Bovill 1999). Therefore the degree of productivity/interactivity is another feature which is mostly associated with the medium itself.

Social distance

Ravid & Tolchinsky (2002) stress the role of social context rather than features of the medium. In their view being literate means to possess a linguistic repertoire that encompasses a wide range of registers and genres. Register distinctions mainly express social dimensions (e.g. power, authority, distance, politeness, and intimacy), which explore the boundaries of familiarity and formality.

Domain

According to Ravid & Tolchinsky (2002) genres are broadly defined by function, social-cultural practices, and communicative purpose (e.g. conversation, narration, information). Similarly, others claim that differences between features of language which distinguish discourse types reflect the 'domain' of literate activity (Anderson & Stokes 1984; Purcell-Gates 1996; Teale 1989). Literate events do not function as isolated bits of human activity, but as connected units embedded in a functional system of activity. Heath (1980, 1984) is noted especially for the observation that people read and write for numerous purposes. By and large, she distinguishes between four types of function: entertainment, instrumental, social, and epistemic (e.g. education-related activity, religion, general information, storybook time)[1].

2.3. New media, new chances

Using the medium features from the preceding section, we can contrast various types of exchange. The first type of exchange is characterized by immediacy. Sender and receiver have unmediated, multimodal input and they are present at the same time and place. These are characteristics of face-to-face conversation. The second type of exchange is characterized by detachment. The exchange between sender and receiver is limited to one modality and sender and receiver are displaced in time and space. These are characteristics of written exchange[2]. New media are multimodal in nature, but they allow for real-time interaction (e.g. instant-messaging) as well as displacement in time and space (e.g. email, text-messaging, reading websites). In this sense, they have the potential to resemble either face-to-face communications or written exchange. An overview of the various types of exchange is given in table 1. We will refer to these as 'medium types'. Contrasting medium types in terms of their features allows us to "look for the different ratios of the old and the new across the field of new media" (Lister et al. 2003: 39). According to Lister et al. (2003) we have to ask ourselves whether new media are genuinely and radically new, or are whether they are better understood as simply an element of change in the nature of an already established medium. New technologies do not always form a clear break with the past but often refashion older media first. Lister et al. (2003) call this 'remediation'.

Table 1: Medium types and features

Medium		**Modality**	**Spatial-temporal distance**
1.	face-to-face conversation	unmediated, multimodal	present in time and space
2.	written text	written	displaced in time and space
3a.	new media (real-time)	multimodal	present only in time
3b.	new media (displaced)	multimodal	displaced in time and space

Medium features allow us to give a characterization of different medium types. As a next step, we can compare the way medium types are used by focusing on their usage features. All four types of medium allow for communications with known and unknown others (social distance feature). Moreover, they can all be used for a range of purposes, varying from contextualized uses to more epistemic uses (domain feature). Of course, it is debatable whether this potential is exploited by young people across all medium types. As we learned in the introduction, there appears to be evidence to the contrary. Teens use the internet mostly for communication and entertainment purposes, in particular to maintain and strengthen existing relationships (Boase et al. 2006; Boneva et al. 2006; Cummings, Lee & Kraut 2006; Duimel & De Haan 2007; Grinter & Palen 2002; Livingstone & Bober 2005; Peter & Valkenburg 2005). It is not exactly clear how these uses of new media relate to those of written media and face-to-face communication.

The aim of this paper, then, is to systematically investigate the uses of various medium types in the lives of young people. We will do so by focusing on their frequency of occurrence, which is an indicator of the importance young people attribute to them. 'Medium use' is approached here as two constructs, namely the social distance and domain involved in the use of a certain medium type. First, we want to find out whether the use of written text (type 2) follows a pattern different or similar to face-to-face conversation (type 1). Second, we want to test whether the use of new media real-time (type 3a) resembles face-to-face conversation. Third, we want to explore whether the use of new media displaced in time and space (type 3b) resembles written exchange. By conducting these comparisons we hope to address the issue whether new media signify a return to the preprint era, a refashioning of older media, or whether they bring something entirely new. Our ulterior motive is to find out whether a type of usage is lost which is typically associated with the written word.

3. Method

A questionnaire was administered in the spring of 2008 to 70 Dutch students from 11 7th grade classes (i.e., *brugklassen*) in the lower tracks of prevocational secondary education (i.e., *vmbo-basisberoepsgerichte leerweg* and *vmbo-kaderberoepsgerichte leerweg*). A total number of 10 ethnically mixed schools participated. The sample consisted of 28 girls and 42 boys, 34 monolinguals and 36 multilinguals, who were 12-14 years of age. Students filled out the questionnaire individually via a website. They did so in small groups (6-7 students) in a school classroom with a researcher present on-site. In the next section, results are presented.

3.1 Construction of the questionnaire

A method of questionnaire construction specifically suited to operationalize a multi-dimensional concept such as literacy is proposed by facet theory (Dancer 1990). Facet theory has its roots in the work of Louis Guttman and it dates back to the 1950s. Guttman's goal was to formulate a definitional framework for a content universe. His theory fits the Wittgensteinian insights nicely because the idea is that constructs should be defined in terms of observations. This requires that the content of items is sufficiently varied and broad so as to cover all relevant aspects of a content domain. Facet theory brings this about by means of a 'mapping sentence'. The mapping sentence we employ to demarcate the content of universe for 'literacy'is given in figure 1. It is based on the discussion in the preceding section on relevant features of literacy. The mapping sentence consists of several sets ('facets') and elements of those sets ('structs'). Facets reflect the underlying conceptual and semantic components of a content universe, in our case 'literacy'. Any variable from our literacy universe is denoted by one element for each of the five facets. This combination of structs is called a 'structuple'. For instance, reading a book for entertainment purposes is described by the structuple $a_2b_3c_3d_2e_2$.

Figure 1: Mapping sentence for 'literacy'

A literate activity is a { *Consumption vs. interactivity*: a_1 = productive/interactive; a_2 = consumptive } activity (x) involving a(n)

{ *Modality*: b_1 = unmediated, multimodal; b_2 = mediated, oral; b_3 = mediated, written; b_4 = mediated, multimodal } exchange between a sender and receiver

{ *Spatial-temporal distance*: c_1 = present at the same time and place; c_2 = present at the same time, but difference place; c_3 = displaced in time and place } who

{ *Social distance*: d_1 = know each other well; d_2 = do not know each other (well) } while the exchange occurs for

{ *Domain*: e_1 = instrumental; e_2 = social/entertainment; e_3 = epistemic } purposes to the person (y) under investigation.

One application of facet theory is for questionnaire construction. We have developed a questionnaire based on the mapping sentence provided in figure 1, which allows for 144 structuples. Ideally, all structuples are covered in the questionnaire in the form of individual items. The great advantage of employing facet theory for questionnaire design is that one is forced to consider activities for *all* structuples. Thus, this method reduces selection bias in the sorts of activities to be included in the questionnaire.

We found that 24 structuples are structurally impossible, i.e. all combinations between b_1-c_2 and b_1-c_3. Moreover, 65 structuples are unlikely to be observed in the real world, e.g. most combinations between b_2-c_1, b_3-c_1 and b_4-c_1. It is possible to come up with examples of unlikely structuples, for instance the awkward situation of two people telephoning while present at the same time and place. We did not incorporate such atypical activities. This left us with 55 structuples. Another concern of us was to remain faithful to the lifeworld of young people. This means that we excluded certain types of activities from the questionnaire which probably would be relevant for adults only, e.g. having a telephone conversation with a stranger for epistemic purposes (structuple $a_1b_2c_2d_2e_3$). Eventually, we incorporated 65 items in the questionnaire corresponding to 39 structuples in total.

Table 2: Examples of questionnaire items

Item	Structuple
Do you ever use MSN to keep in touch with friends?	$a_1b_4c_2d_1e_2$
Do you ever phone with friends to keep in touch?	$a_1b_2c_2d_1e_2$
Do you ever read a magazine for relaxation, for instance about fashion or computer games?	$a_2b_3c_3d_2e_2$
Do you ever read a school textbook at home?	$a_2b_3c_3d_2e_3$
Do you ever text-message a friend to make an appointment?	$a_1b_4c_3d_1e_1$

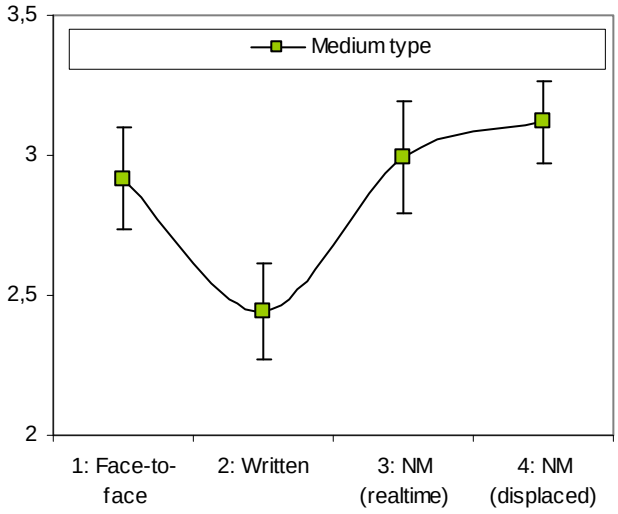
There are two ways to translate structuples into questionnaire items, namely to do so literally in the form of the mapping sentence or to make the facets more inconspicuous to the respondent. We chose for the latter option because the mapping sentence is fairly complex and difficult to conceptualize. Typical questionnaire items are presented in table 2. For each questionnaire item, respondents were asked to estimate the amount of exposure, which was measured on the following seven-point scale: (1) never, (2) less than once a month, (3) at least once a month, (4) at least once a week, (5) (almost) every day, (6) 1-2 hours a day, (7) more than two hours a day.

4. Results

Medium type

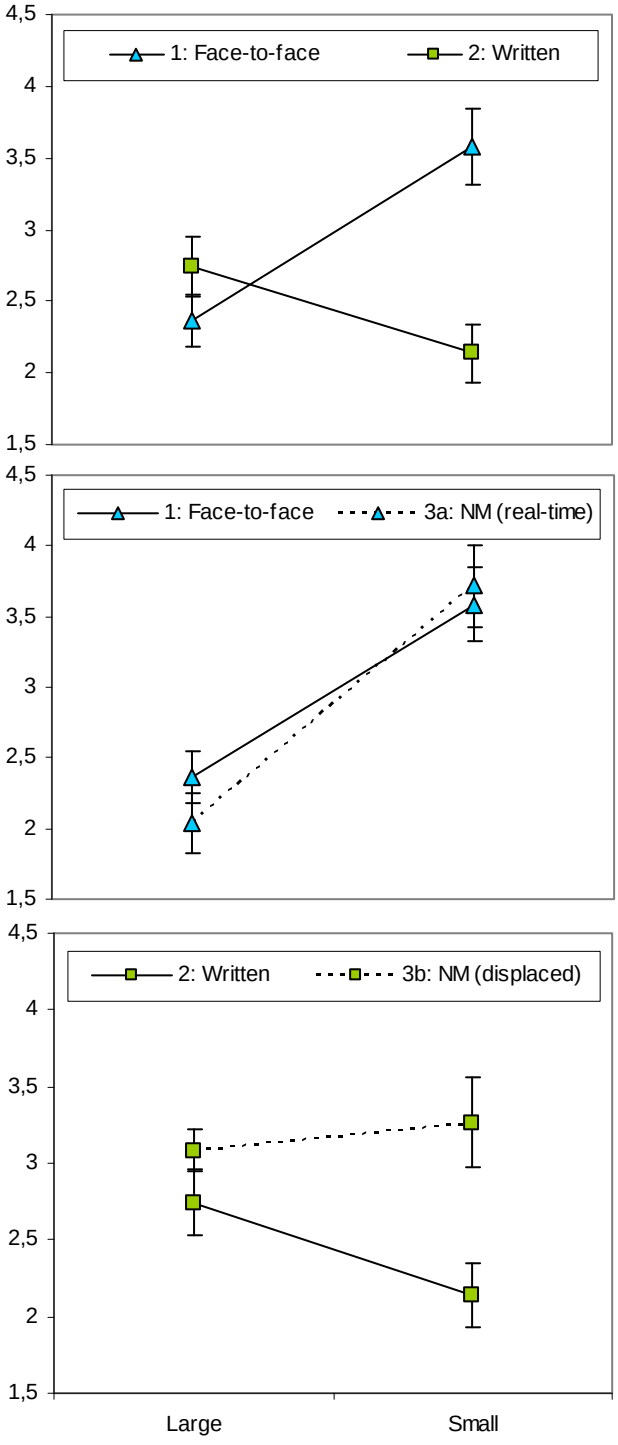
First, we conducted a one-way repeated-measures ANOVA to investigate the frequency scores of the four medium types. Mauchly's test indicated that the assumption of sphericity had been violated, $\chi^2(5) = 23.98$, $p < .01$. Therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = .83$). Activities involving face-to-face contact had significantly higher frequency ratings than activities involving written text,

Figure 2. Medium



$F(1, 69) = 25.24$, $p < .00$, $d = .60$. New media activities taking place real-time were more frequent than face-to-face contact, but this difference was not significant. In addition, there was no significant difference between both types of new media. Looking at the graph presented in figure 2, these results indicate that only written media show a distinctly different frequency of use. The most frequent items for each medium type respectively were talking with friends about the day ($M = 4.06$), reading school books ($M = 4.03$), instant-messaging to keep in touch with friends ($M = 5.54$), and reading subtitles while watching a film or series ($M = 5.04$). Interestingly, there was a large gap in frequency score between the first item of the written category and the second (i.e. reading magazines for entertainment purposes, $M = 2.87$).

Figure 3: Social Distance



Social distance

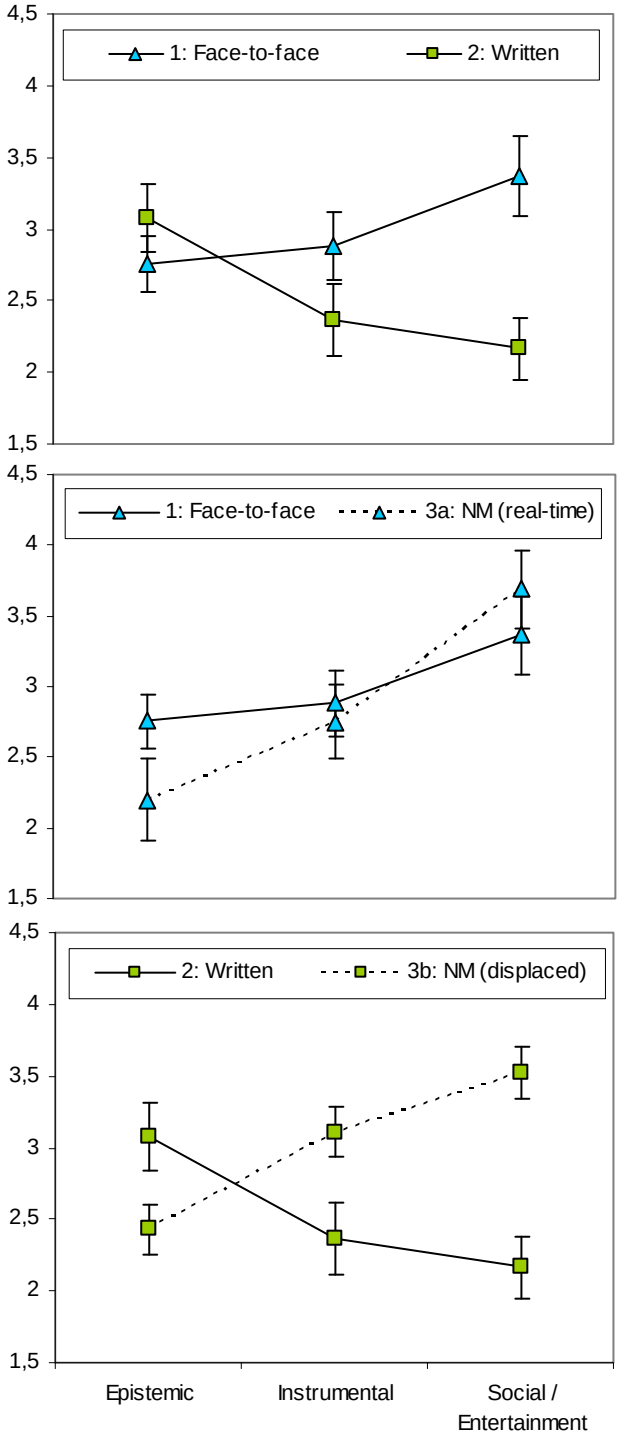
Next, we conducted a two-way repeated-measures ANOVA to test which effect medium type and social distance had on the frequency scores of literate activities. Mauchly's test indicated that the assumption of sphericity had been violated for the interaction effect between medium type and social distance, $\chi^2(5) = 16.36$, $p < .01$. Therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = .92$). There was a significant main effect of medium type on ratings of frequency, $F(3, 207) = 19.12$, $p < .00$. Contrasts revealed that ratings of medium type 1, $F(1, 69) = 29.9$, $p < .00$, $d = .66$, and type 3b, $F(1, 69) = 68.93$, $p < .00$, $d = 1.00$, were significantly higher than type 2. There was no significant difference between medium type 1 and 3a. There was also a significant main effect of social distance on frequency rating, $F(1, 69) = 68.01$, $p < .00$. Contrasts revealed that ratings of small social distance $F(1, 69) = 68.01$, $p < .00$, $d = .99$, were significantly higher than large social distance. There was a significant interaction effect between medium type and social distance, $F(2.63, 181.13) = 59.72$, $p < .00$. This indicates that social distance had different effects on students' ratings depending on the type of discourse. To break down this interaction, contrasts were performed comparing medium type 1 to type 2, type 1 to type 3a, type 2 to type 3b, and large social distance to small social distance. These revealed significant interactions when comparing both social domains for medium type 1 compared to type 2, $F(1, 69) = 104.60$, $p <$

.00, d = 1.23, type 1 compared to type 3a, $F(1, 69) = 4.69$, $p = .03$, $d = .26$, and type 2 compared to type 3b, $F(1, 69) = 25.72$, $p < .00$, $d = .61$. Looking at the interaction graph presented in figure 3, these effects reflect that small social distance (compared to large social distance) lowered scores in medium type 2 while it increased scores in the three other medium types. Interestingly, this increase was much less drastic in medium type 3b. This was due to items involving consumption of television and YouTube, which all received high frequency ratings (i.e. not lower than $M = 3.50$).

Domain

Finally, we conducted a two-way repeated-measures ANOVA to test which effect medium type and domain had on the frequency scores of literate activities. Mauchly's test indicated that the assumption of sphericity had been violated for the main effect of medium type, $\chi^2(5) = 30.95$, $p < .00$, and for the interaction effect between medium type and domain, $\chi^2(20) = 53.83$, $p < .00$. Therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = .80$ for the main effect of medium type and $\varepsilon = .80$ for the interaction effect between medium type and domain). There was a significant main effect of medium type on ratings of frequency, $F(2.41, 166.18) = 11.50$, $p < .00$. Contrasts revealed that ratings of medium type 1, $F(1, 69) = 22.81$, $p < .00$, $d = .57$ and type 3b, $F(1, 69) = 46.12$, $p < .00$, $d = .82$, were significantly higher than type 2. There was no significant difference between medium type 1 and 3a. There was also a significant main effect of domain on frequency rating, $F(2, 138) = 33.51$, $p < .00$. Contrasts revealed that ratings of the instrumental domain $F(1, 69) = 5.95$, $p = .02$, $d = .29$, were significantly higher than the epistemic domain, and ratings of the social/entertainment domain, $F(1, 69) = 35.64$, $p < .00$, $d = .72$ were significantly higher than the instrumental domain. There was a significant interaction effect between medium type and domain, $F(4.80, 331.42) = 33.59$, $p < .00$. This indicates that domain had different effects on

Figure 4: Domain



students' ratings depending on the type of discourse. To break down this interaction, contrasts were performed comparing medium type 1 to type 2, type 1 to type 3a, type 2 to type 3b, the epistemic domain to the instrumental domain, and the instrumental domain to the epistemic domain. These revealed significant interactions when comparing the instrumental domain to the epistemic domain for medium type 1 compared to type 2, $F(1, 69) = 23.36$, $p < .00$, $d = .58$, medium type 1 compared to type 3a, $F(1, 69) = 5.65$, $p = .02$, $d = .29$, and type 2 compared to type 3b, $F(1, 69) = 56.82$, $p < .00$, $d = .91$. These also revealed significant interactions when comparing the social/entertainment domain to the instrumental domain for medium type 1 compared to type 2, $F(1, 69) = 12.65$, $p < .00$, $d = .43$, type 1 compared to type 3a, $F(1, 69) = 4.56$, $p = .04$, $d = .26$, and type 2 compared to type 3b, $F(1, 69) = 15.33$, $p < .00$, $d = .47$. Looking at the interaction graph presented in figure 4, these effects reflect that the epistemic domain increased scores in medium type 2 while it lowered scores in the other three medium types. These effects also reflect that the social/entertainment domain lowered scores in medium type 2 while it increased scores in the other three medium types.

5. Conclusion and discussion

The results corroborate previous research findings that young people typically engage in new media with people they know and for social/entertainment purposes, a pattern similar to face-to-face conversation. However, this only holds for real-time use of new media. New media use which is displaced in time and space deviates from the pattern because it involves unknown others almost as frequently as known others. This neutralization of social distance is mostly the effect of television and YouTube. We hypothesize that the consumptive nature of such activities is of importance here, which is a factor we did not incorporate in our analyses.

Interestingly, the written word shows a pattern of use which is different from all other medium types, including new media use which is displaced in time and space. Young people do not engage in written activities to maintain existing relationships, nor do they engage in written activities for social/entertainment purposes. Instead, written activities typically involve a large social distance and an epistemic function. These results reflect that the written word plays a marginal role in the out-of-school environment of young people: When they do engage in a written activity it is mostly school-related. This means that there is a large discrepancy between students' preferred literacy practices and practices that are imposed on them. A cynic might conclude from this that the school fails to connect to students' out-of-school literacy practices, whereas an optimist might uphold that it is precisely the function of school to introduce students with a type of exchange they would not encounter otherwise. Either way, it appears that in the group of teens under investigation, new media do not take on those uses of written media that are believed to promote a more detached and critical attitude.

[1] The generalization into types of function is our own.

[2] We did not incorporate the third medium feature here, consumption vs. production/interactivity. For present purposes we wanted to treat activities such as reading books (consumptive) and writing letters (productive/interactive) as instances of one medium type, in this case as 'written medium'.

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