Understanding New Media Literacy: An Explorative Theoretical Framework

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ABSTRACT

With the advent of new media technologies, the role of media in a society has been changed that leads researchers to re-construct the meaning of literacy from classic literacy to new media literacy. There have been continuing efforts to understand new media and promote the importance of becoming new media literate among researchers, educators, and policy makers. Fundamental understanding to what is new media literacy still remains unclear. There is only one paper providing the preliminary work in unpacking the framework of new media literacy. Although the developed framework has its merit, more details and information need to further elaborate and refine. In this paper, we acknowledge the two continua framework and endorse four types of literacy comprising of this two-continua. Moreover, we provide ten fine-grained indicators to reflect these four types of literacy. We also propose another new divide that distinguishes Web1.0 from Web2.0.

Keywords

New media literacy, Web 2.0, Consuming, Prosuming

Introduction

With the advent of new media technologies, the landscape of media has been changed drastically and dramatically. Although there are various terms such as ICT and digital technologies to name these technologies, we choose the term, 'new media' technologies, as ICT and digital technologies could be embedded in it. As Eshet-Alkalai & Soffer (2012, p. 1) argued in an editorial, 'digital technologies (social media, multimedia and communication technologies) have penetrated almost every aspect of our lives'. These changes cause new forms of cultural practice in working, learning and personal domain. The appearance of Web 2.0 is an example (Berger & McDougall, 2010). These new technologies make the media even more significant and influential than ever in human history. Therefore, individuals need to be new media literate to be able to fully function in the society. This paper aims at providing an explorative theoretical framework to define and understand the 'new media' literacy. Based on existing literature and the new media ecology, this framework is developed to help understand the new media literacy among the public. In the rest part of introduction, we discuss the characteristics of new media and the development of media literacy which is precedent and a part of our new media literacy framework. Then, we examine an existing framework proposed by Chen, Wu, & Wang (2011) and point out the limitations of their framework. In the third part of this paper, we suggest a refined framework that works better on explaining the elements of new media literacy. While developing this theoretical framework, there are some difficulties and challenges which we document them in the conclusion with our suggestions for further developing the theory of new media literacy.

The term 'new media' broadly refers to computer and communication technologies (Chen, Wu, & Wang, 2011; Rice, 1984), or 'a wide range of changes in media production, distribution and use' (Lister, Dovey, Giddings, Grant, & Kelly, 2003, p. 13). A majority of researchers tend to define new media by highlighting its technical characteristics including digitality (i.e., numerical representation), hypertextuality, dispersal, virtuality, modularity, multimodality, hybridity, interactivity, automation, and variability (see Anderson & Balsamo, 2008; Lister et al., 2003; Manovich, 2001; Nichols, 2008; Pratt, 2000). Meanwhile, some researchers have begun to address the socio-cultural characteristics of new media. Specifically, they advocated four key points: (a) each medium has unique language; (b) media messages are constructed; (c) media have embedded value and ideology; and (d) media serve various purposes (e.g. Aufderheide & Firestone, 1993; Blau, 2004; Ito et al., 2008; Newby, Stepich, Lehman, & Russell, 2000; O'Reilly, 2005; Pink, 2005; Pungente, Duncan, & Andersen, 2005). More details on these points will be discussed later in this paper. As suggested by Gee (2001), Jenkins (2006) and Lievrouw & Livingstone (2006), the socio-

cultural characteristics should be greatly underlined rather than the technical issues in the context of 21st century new media era.

Literacy for the 21st century: from media literacy to new media literacy

The notion of media literacy has existed in the Western for a long time. It is not only the precedent of new media literacy but also covered by the new media literacy framework in this paper. Therefore, it is worth of discussing the development of media literacy before introducing our framework of new media literacy as there are some common assumptions and arguments.

The beginning of media literacy can be traced back to the first half of the 20th century when Leavis & Thompson (1933) proposed to teach students how to distinguish the high culture and the popular culture through education in the UK. In this early protectionist approach, these advocates aim at promoting high culture to fight against the increasing growth of popular culture in printing media era (Buckingham, 2003). In 1950s, media literacy was introduced to the United States with the acknowledgement of the increasing impact of mass media such as radio and television on people's daily life and schooling (Schwarz, 2005). A general trend of the development of media literacy as well as new media literacy is that the importance of media literacy is brought back to the educational agenda when there is a new media technology that causes collective anxiety in the society (Lin, 2010). The appearance of new media also raised concerns among the public in various countries. For example, the recently growing interests in media literacy in various East Asian countries such as China (including Hong Kong), Taiwan, Japan and Korea since late 1990s (Cheung, 2009) comes from an emerging new media technology, the internet, that causes cyber cafe phenomenon. The birth of internet is a milestone in the development of media literacy because it 'changed the whole media landscape' and starts a debate on the different approaches to media literacy (Gauntlett, 2011). This is also the starting point for us to propose a framework that can both suit the need of conventional media such as television, newspaper and radio and new media such as internet and the Web 2.0 technology.

With the emerging new media technologies in the beginning of 21st century, traditional literacy is no longer sufficient for an individual to competently survive in this new media ecology. Wu and Chen (2007) argued that media is not merely shaping our culture; it is our culture. In other words, new media plays an indispensable role in human societies and individuals need to equip with new literacies (e.g., Cope & Kalantzis, 2000) to be able to fully engage in the new media environment. All the above arguments represent the necessity and importance of new media literacy.

As aforementioned, there are similarities between media literacy and new media literacy regarding the approaches to understand media, the role of media in a society and the purposes of media literacy. Cappello, Felini & Hobbs (2011) indicated that the current media literacy education strikes a balance between discrimination/protection and empowerment approaches and the recognition of media as an aspect of social environment is a pushing force for the recent development of media literacy in the world. The moving away from extreme protectionist approach and acknowledging the great socio-cultural impact of media have also offered a solid foundation for the development of new media literacy. Detail discussion on various approaches of media literacy education can be referred to Buckingham (2003), Leaning (2009) and Lin (2010). Livingstone, Van Couvering & Thumin (2004) revealed three purposes of implementing media literacy: (a) democracy, participation and active citizenship, (b) knowledge economy, competitiveness and choice, and (c) lifelong learning, cultural expression and personal fulfillment. Similar emphases on the role media literacy are also evident and advocated in the media literacy documents/standards of US (National Association for Media Literacy Education, 2007), UK (Ofcom, 2004), Singapore (Lin, 2011; National Institute of Education, 2009), and Taiwan (Lin, 2009; Ministry of Education, 2002).

Meanwhile, research on media literacy has also suggested a progressive shift in its meaning. As it is suggested in a review by Cervi, Paredes, & Tornero (2010), literacy has developed generally from classic literacy (e.g. reading and writing) to audiovisual literacy (e.g. related to electronic media) to digital literacy (e.g. related to digital media) and recently to a more comprehensive new media literacy (e.g. related to Internet and Web 2.0). Moreover, Cappello, et al. (2011) applied the concept 'expanded literacy' (p. 68) to underline the shift from the literacy strictly related to alphabetic and written texts to another literacy focused more on social communication and ideology. Besides, Chen et al. (2011) argued that an individual needs to become new media 'literate' in order to participate responsibly in the new century society.

Considering the importance of new media literacy, it seems necessary to explore the content and theoretical framework of 'new media literacy (NML)'. However, there are very few applicable frameworks that provide a comprehensive understanding about how NML can and should be like. There is only one paper documenting the attempt to develop a framework to unpack NML (Chen et al., 2011) with a focus on technical and socio-cultural characteristics of new media. In next section, we discuss this framework and indicate some limitations. Then, we argue for a need to further elaborate and refine the framework to make it work better in explaining the socio-cultural consequence and the daily practices of new media.

Attempt to unpack NML: A preliminary framework and its limitations

A preliminary framework

As Chen et al. (2011) pointed out, most researchers perceived NML 'as a combination of information skills, conventional literacy skills, and social skills' (p. 84) or *multiliteracies*. That is, relevant definitions generally overlooked the significance of both the technical and socio-cultural characteristics of new media in shaping what NML can and should be. To address this gap, Chen et al. (2011) proposed a promising framework that unpacks NML as two continua from consuming to prosuming literacy and from functional to critical literacy (see Figure 1). Specifically, the 'consuming' literacy was defined as the ability to access media message and to utilize media at different levels, while 'prosuming' literacy ability to produce media contents (e.g. messages and artifacts). According to Chen et al. (2011), the consuming aspect should be integrated and implied in the prosuming aspect. For instance, an individual have to read and understand others' ideas before they create media contents to respond. On the other hand, the 'functional' literacy refers to individuals' 'textual meaning making and use of media tools and content' (Chen et al., 2011, p. 86), while 'critical' literacy their ability to analyze, evaluate, and critique media. Similarly, the functional aspect provides an essential basis for the critical aspect. For example, individuals may fail to make their great grasp of socio-cultural contexts of the media explicit due mostly to their unfamiliarity with the technical characteristics of new media tools/languages.
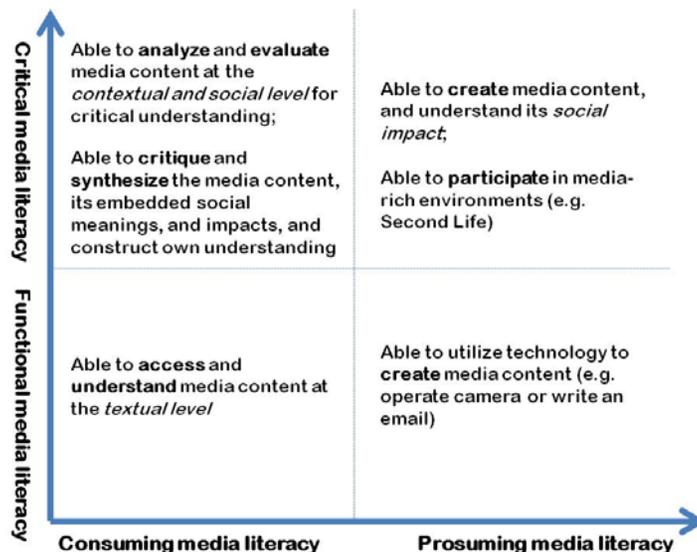

Figure 1. Framework for new media literacy (cited from Chen et al. (2011))

Based on the above two continua, four types of NML can be recognized. They are (a) functional consuming (FC, the lower left quadrant of Figure 1), (b) critical consuming (CC, the upper left quadrant), (c) functional prosuming (FP, the lower right quadrant), and (d) critical prosuming (CP, the upper right quadrant). Accordingly, FC requires individuals' abilities to access media content and understand its textual meaning. CC involves abilities to interpret the media content within specific social, economic, political and cultural contexts. FP focuses on abilities to participate in the creation of media content, while CP underlines individuals' contextual interpretation of the media content during their participation activities. As Chen & Wu (2011) suggested, CP should be advocated as an important goal in the 21st century information society.

In brief, Chen et al.'s (2011) two-continuum framework indeed provides a better understanding of the notion NML. However, such framework still can be further developed, which constituted the main concern of this paper. More discussion on Chen et al.'s (2011) framework is detailed in the following section.

Limitations of existing framework

There are, at least, two limitations in the framework by Chen et al. (2011). First, the framework has characterized the four types of NML in a relatively coarse manner. As seen in Figure 1, it provides certain indicators/keywords for understanding each type of NML. For example, it is expected that functional media consumer be 'able to *access* and *understand* media contents at the textual level' (p. 85). Additionally, critical media consumers should be able to *analyze*, *evaluate*, *critique*, and *synthesize* the media content by pondering its embedded socio-cultural meanings/values. However, what these keywords refer to remain unclearly defined. This may further make unspecified the boundaries among the four types of NML. For instance, how great is the difference between 'understand' (from the functional consuming literacy) and 'analyze' (from the critical consuming literacy)? All these indicate the necessity of developing a more fine-grained framework of NML.

Second, the framework did not distinguish Web 1.0 from Web 2.0, which plays a pivotal role in shaping a distinct culture of media. In Figure 1, Chen et al. (2011) has unpacked the prosuming media literacy into students' abilities to *create* media contents and to *participate* in media-rich environment. This understanding of the prosuming literacy reflects their consideration of both the Web 1.0 and Web 2.0 environments. Within the Web 1.0 environment, students are allowed to create media contents, such as turning hardcopy into digital format, composing an email, and editing a photo. However, the Web 1.0 does not provide opportunities for students to participate as a group to share and negotiate their perspectives, which can be accomplished within the Web 2.0 environment instead (Berger & McDougall, 2010). More importantly, a number of scholars have recently emphasized that the Web 2.0 plays an essential part in encouraging adolescents to (a) make their voice heard, (b) embody their ideology, attitude, values through different identities, (c) grasp various social norms, and (d) participate responsibly in critical exchange/co-construction of ideas (e.g. Thoman & Jolls, 2008; Gee, 2001; Jenkins, Purushotma, Clinton, Weigel, & Robison, 2006). All these benefits are hardly expressed by the Web 1.0 environment. Therefore, it is necessary to make a divide between the Web 1.0 and 2.0 when discussing the prosuming media literacy. To tackle this issue, a refined framework is proposed in the next section.

A refined framework of NML

Our attempt is to propose a refined framework (see Figure 2) that aims to address the two limitations of Chen et al.'s (2011) framework. Like Chen et al.'s framework, our framework acknowledges NML as indicated by two continua (i.e., *functional-critical* and *consuming-prosuming*) that consist of four types of literacy: FC, CC, FP, and CP. Furthermore, our framework further unpacks the four types of NML into ten more fine-grained indicators, and proposes another new divide that distinguishes Web 1.0 from Web 2.0.
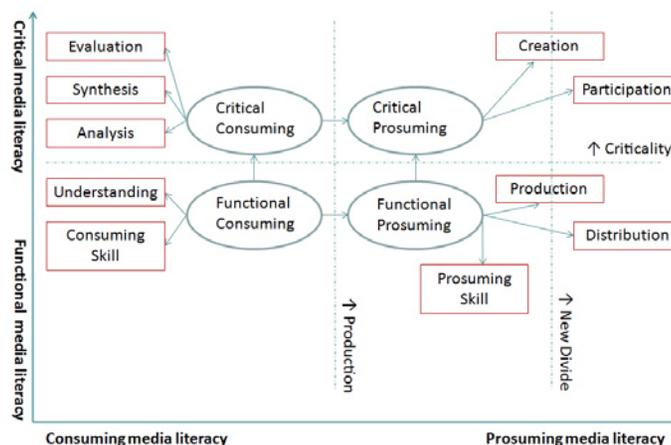

Figure 2. A refined framework of new media literacy

Framing NML: A refined framework with indicators

Our framework suggests that the four types of NML can be generally represented by ten more fine-grained indicators (shown in the red squares in Figure 2). In the following paragraphs, each indicator is introduced, elaborated, and discussed. Specifically, we firstly define and illustrate each indicator, and then discuss the similarities and/or differences between our definitions and others from the literature.

Consuming skill. The *consuming skill* refers to a series of technical skills necessary for an individual when an individual consumes media contents. For example, it requires an individual to know how to operate a computer, how to search/locate information, how to use information technology (e.g. Internet), and so on. This indicator bears some resemblance with Buckingham et al.'s (2005) *access*, which focuses on the ability to manipulate hardware and software and to gather information. Besides, the indicator also encompasses Chen and Wu's (2011) *access*, which addresses the ability to use different format/modality of media.

Understanding. This indicator refers to individuals' ability to grasp the meaning of the media contents at a *literal* level. Examples include individuals' ability to capture others' ideas that published on different platforms (e.g. book, video, blog, Facebook, etc.), and to interpret the meaning of new short forms or emoticons. Besides, four (out of 11) media literacy skills proposed by Jenkins et al. (2006) are other representative illustration as well. Specifically, individuals should be able to experiment with their surroundings to solve problems (i.e., *play*), to interpret and construct dynamic models (i.e., *simulation*), to scan their environment and shift flexibly onto salient information (i.e., *multi-tasking*), and to handle the flow of information across various modalities (i.e., *transmedia navigation*). Notably, the indicator *understanding* is distinct from but part of both Ofcom (2004) and Buckingham et al.'s *understand*. That is, their indicator involves not only individuals' textual understanding of, but also their critical stance towards the media content. Similar to Chen and Wu (2011), we tend to define *understanding* at the *textual* level only. On the other hand, we attempt to further unpack the *critical* level of Buckingham et al.'s (2005) *understand* into three more fine-grained indicators (i.e., *analysis*, *synthesis*, and *evaluation*), which are elaborated as follows.

Analysis. This indicator refers to individuals' ability to deconstruct media messages. Unlike *understanding* discussed above, this indicator can be seen as a semiotic 'textual analysis' (Share, 2002, p. 144) that focuses on language, genres, and codes of multiple modalities (e.g. print based, digital, etc.). As Thoman and Jolls (2008) illustrated, individuals need to be aware of the authorship (e.g. all media messages are constructed), format (e.g. the construction of media messages involves using a creative language with certain rules), and audience (e.g. interpretations of media messages vary across individuals) when they deconstruct media messages. Generally, the indicator shares similar meaning with Chen et al.'s (2011) *analyze* and Buckingham et al.'s (2005) *representation* (belonging to their indicator *understand*). All these indicators consistently stress that individuals should not simply perceive media contents as neutral conveyors of reality, but recognize the construction of media messages as a subjective and social process (e.g. Pungente et al., 2005).

Synthesis. This indicator refers to individuals' ability to remix media content with integrating their own viewpoints and to reconstruct media messages. For example, individuals are expected to compare news with the same theme from different sources. As shown in Figure 2, the indicator *synthesis* is categorized in the consuming rather than the prosuming literacy. This is based on the argument that synthesis itself does not necessarily imply prosuming. For instance, one might compare the number of people reported for rally from different media and notice the difference. It does not necessarily imply that the individual knows which number is closer to the 'truth' or that an individual has submitted a new item (e.g. posting one's own ideas). This indicator bears much resemblance with Jenkins et al.'s (2006) *appropriation*, which refers to the ability to sample and remix media content in a meaningful manner. Strictly speaking, as Jenkins et al. (2006) implicitly suggested, *appropriation* also involves *analysis* discussed above. When individuals remix media contents, they need to appreciate the 'emerging structures and latent potential meanings' (Jenkins et al., p. 33) of the message/language.

Evaluation. This indicator includes individuals' ability to question, criticize, and challenge the credibility of media contents. Compared to *analysis* and *synthesis* above, this indicator represents much higher-order criticality though they all acknowledge that media contents are merely human-constructed representation. It requires individuals to interpret the media contents by considering issues such as identity, power relation, and ideology (e.g. Chen et al., 2011). More importantly, *evaluation* also involves decision-making process which *synthesis* (and *analysis*) may not explicitly underline. For example, comparing prices from different vendors over the internet is an action of *synthesis*,

while making a decision of which vendor to buy from an action of *evaluation*. The indicator *evaluation* seems to echo other similar terms used by the literature. These terms include Jenkins et al.'s (2006) *judgment* that requires 'the ability to evaluate the reliability and credibility of different information sources' (p. 43) and Share's (2002) *representation* that underlines that 'media have embedded ideologies, discourses, and points of view that convey hierarchical power relations' (p. 144). Furthermore, this indicator also gains supports from other scholars who similarly advocated that media contents have embedded values and serve various purposes (e.g. Aufderheide & Firestone, 1993; Ito et al., 2008; Lievrouw & Livingstone, 2006; Thoman & Jolls, 2008)

To sum up, the above five indicators are representing the consuming media literacy, which we propose a media consumer should express. With the development of technology, the gap between media producers and consumers has been converging (Jenkins, 2006). As Buckingham (2009) suggested, such convergence tends to result in the appearance of a new breed of *media prosumers*. More importantly, the new forms of cultural expression and exchange, which are organized democratically and collectively, also motivate individuals to participate in media production and to have their voice heard (Blau, 2004; Chen et al., 2011; Jenkins et al., 2006; Pink, 2005). In the following paragraphs, we continue to introduce the other five indicators for the prosuming media literacy.

Prosuming skill. This indicator refers to a set of technical skills necessary for an individual to produce/create media contents. For example, it involves individuals' ability to set up an online communicative account (e.g. MSN, Skype, Blog, Gmail, and Facebook), to use software to generate various digital artifacts (e.g. picture, video clip, and flash), and to do programming (e.g. for computer or hand phone devices). Together with the next two indicators (i.e., *distribution* and *production*), it constitutes Thoman and Jolls' (2008) *create* that underlines the use of various technologies to create, edit, and disseminate media messages.

Distribution. This indicator refers to individuals' abilities to disseminate information at hand. We considered this indicator mainly based on Buckingham's (2009) insightful viewpoint 'that the most significant developments in recent years have been to do with technologies of distribution rather than of production' (p. 235). In other words, distribution of information can be seen as another (or even more effective) means to prosume media. Compared to *prosuming skill*, *distribution* usually involves the process of sharing. Relevant examples include individuals' abilities to use build-in function on social network websites to share their feelings (e.g. like/dislike), to share media messages, and to rate/vote for products/services. Along with the aforementioned *computer skill* and *synthesis*, this indicator belongs to Jenkins et al.'s (2006) *networking* literacy that focuses on 'the ability to search for, synthesize, and disseminate information' (p. 49).

Production. This indicator involves abilities to duplicate (partly or completely) or mix media contents. Actions of *production* include scanning (or typing) a hardcopy document into digital format, producing a video clip by mixing images and audio materials, and scribble online through blog or Facebook. The indicator generally shares many similarities to Jenkins et al.'s (2006) *distributed cognition* and *transmedia navigation*. One refers to 'the ability to interact meaningfully with tools that expand mental capacities' (p. 37), while the other 'the ability to deal with the flow of stories and information across multiple modalities' (p. 46). In brief, the above three indicators (i.e., *prosuming skill*, *distribution*, and *production*) jointly provide a more fine-grained understanding of Chen et al.'s (2011) functional prosuming literacy.

Participation. Unlike the above three prosuming indicators, participation requires more criticality from individuals. We propose this indicator based mainly on Chen et al.'s (2011) framework and Jenkins et al.'s (2006) 'participatory culture'. Specifically, it refers to abilities to participate interactively and critically in new media environments. By interactively, we emphasize the bi-lateral interactions among individuals (or participants). For example, individuals are expected to actively co-construct and refine one another's ideas within certain media platform (e.g. blog, chat room, Skype, Facebook, etc.). It can be also illustrated by Jenkins et al.'s (2006) *collective intelligence*, that is, 'the ability to pool knowledge and compare notes with others towards a common goal' (p. 39). By critically, we focus on individuals' awareness of the socio-cultural values, ideology, and power relation embedded in their media participation. For example, individuals are required to effectively handle with different ideas within a social community and even across communities. Jenkins et al.' (2006) *performance* and *negotiation* also provide alternative understanding about such criticality. Specifically, performance refers to 'the ability to adopt alternative identities for the purpose of improvisation and discovery' (p. 28); while negotiation 'the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative sets of norms' (p. 52). The *participation* here also share similar meaning with Thoman and Jolls' (2008) *participate* that requires individuals' constant engagement and interaction for media construction. Compared to all the eight indicators

introduced above, *participation* seems to focus explicitly on social connection that values each individual's contribution. According to Jenkins et al. (2006), active media participation should be underscored in the media education, especially within the Web 2.0 environment popular in the 21st century. We will continue to elaborate this viewpoint in the next section.

Creation. This indicator refers to abilities to create media contents *especially* with a critical understanding of embedded socio-cultural values and ideology issues. Compared to *distribution and production*, *creation* involves much more criticality from individuals. Although both involve criticality, the difference between *creation* and *participation* should be noted. Unlike *participation*, creation usually requires an individual's own initiative rather than bi-lateral interaction among individuals. For example, the first initiation of a thread with criticality would be creation; while the subsequent reflections would be seen as actions of participation. Besides, this indicator can be illustrated as individuals' ability to critically create a blog or webpage, to post original artwork online, or to remix online content into their own creations (Jenkins et al., 2006).

New divide: From Web 1.0 to Web 2.0

Apart from proposing the above ten indicators to understand NML in a more detailed way, our framework also suggests another new divide that distinguish Web 1.0 from Web 2.0. We first discuss the emergence of Web 2.0 and the differences between Web 1.0 and Web 2.0. Then, we explicate why our framework place more emphasis on Web 2.0. These two parts jointly indicate the necessity of the new divide from Web 1.0 to 2.0. Based on this new divide, we explain the categorization of the five prosuming indicators (i.e.: *prosuming skill*, *distribution*, *production*, *participation*, and *creation*) from the Web 1.0 as well as Web 2.0 perspective.

The emergence of Web 2.0

At least two major factors have contributed to the emergence of Web 2.0. First, the recent development of technologies has contributed a lot to the emergence of Web 2.0. The term, Web 2.0, was firstly generated by the O'Reilly (2005) to expound the significant change in the nature of web-based services. That is, as Postigo (2011, p. 182) maintained, 'Web 2.0 describes Web-based technologies, such as wikis, blogs, social networking sites (SNS), and RSS feeds, meant to facilitate and coordinate massively produced knowledge and content'. Moreover, Gauntlett (2011) described 'Web 2.0' as a way of expending existing systems (i.e. the World Wide Web (WWW)) in a new way to bring people together creatively rather than replacing the Web 1.0. Compared to Web 1.0 (WWW technologies), Web 2.0 seems to be more user-friendly and require less technical skills from users. In other words, Web 2.0 has made it easier and more convenient for individuals to *produce* rather than consume media contents only (e.g. Boyd, 2008; Chen et al., 2011; Hardey, 2007). For example, equipped with Web 2.0 technologies, individuals do not need to know HTML if they attempt to design and post professional-looking websites (Postigo, 2011).

Second, Individuals' gradual desire/tendency to share their ideas with others also facilitates the emergence of Web 2.0. As Lim and Nekmat (2008) argued, media consumers today tend to enjoy various avenues by which they can produce and share content (p. 260)'. With the affordance of new media, media consumers may also enjoy infusing their own values into existing media content to make their voice heard (e.g. Shih, 1998; Turkle, 1995). For example, with Web 2.0 technologies, individuals can freely share and discuss their own viewpoints with others. These practices are generally not well supported by Web 1.0, which focuses more on an individual's sole authorship of media content (e.g. ideas or artifacts).

The emergence of Web 2.0 depends mostly on its relative advantages (compared to Web 1.0) in meeting individuals' needs in the contemporary society (also see O'Reilly, 2005). This in some degree supports the proposed new divide from Web 1.0 to 2.0 in our framework (see Figure 2). To further demonstrate the significance of this new divide, more discussion about our emphasis on Web 2.0 in the framework is presented below.

Rationales of our emphasis on Web 2.0

We put much emphasis on Web 2.0 in our framework based on at least three reasons. First of all, Web 2.0 benefits the establishment and development of Jenkins et al.'s (2006) 'participatory culture'. Specifically, the relatively low barriers to artistic expression and civic engagement are evident within the Web 2.0 environment. More importantly,

Web 2.0 allows individuals to contribute valuable and creative works within certain social communities, or called 'affinity groups' (see Gee, 2001). The communities themselves, in turn, provide 'strong incentives for creative expression and active participation' (Jenkins et al., 2006, p. 7). Accordingly, more productive exchange and co-construction of ideas are facilitated. According to Chen et al. (2011), such active (or responsible) participation may facilitate more enabled individuals to become more new media literate.

Web 2.0, secondly, is conducive to the development of 'folksonomy' (Blau, 2004) as opposed to taxonomy by authoritative figures. According to Postigo (2011), information production in the Web 2.0 environment blurs the distinctions between experts and non-experts. Within the Web 1.0 environment, folk people generally act as consumer of media content produced by experts. In contrast, they are both consumers and producers (or called prosumers) in the mode of Web 2.0. They can even collectively criticize the bias or credibility of the media content from the authoritative institutions. For example, folk people can freely express their own ideas and extend/challenge others' (including experts') ideas on the platform of Facebook and Wikipedia. In this sense, both experts and non-experts are authors of the media content.

Then, Web 2.0 allows individuals to embody/interpret one another's values, identities, and/or ideologies when they prosume media. This shares many similarities with Postigo's (2011) perceptions about Web 2.0 as a set of social relations and values. More specifically, individuals may play various roles (e.g. fans, contributors, editors, experts, and critics) during their participation in the Web 2.0 communities. The dynamics of the participation may further enable individuals to better recognize/interpret one another's multiple 'identities' (Gee, 2001) or 'social roles' (Postigo, 2011). As also noted previously, Web 2.0 empowers individuals to remix media (e.g. infuse their own values/ideologies into the existing media content) and participate in co-constructing ideas (e.g. including extend and criticizing others' ideas). Generally, individuals are actually embodying their own values/ideologies during these practices, and such embodiment mostly requires their awareness of other values embedded in the existing media content.

It is necessary to point out that there are some debates on the use of Web 2.0. Advocates of Web 2.0 (e.g. Gauntlett, 2011) suggested that media studies needed to be refreshed to respond to a new era of media participation. Unlike Web 1.0 that follows the traditional 'broadcasting' model, Web 2.0 can be 'described as a huge communal garden, with everyone joining in and adding to it' (Berger & McDougall, 2010, p. 7). However, the presumption that Web 2.0 brings about connected participation has been challenged by opponents of Web 2.0. Major arguments include (a) not sufficient people are participating in Web 2.0 communities (Buckingham, 2010), and (b) relative less concern is put on the Web 2.0 artifacts (Laughey, 2011). Although Web 2.0 is underlined in our framework (Figure 2), we do not suggest the sole use of Web 2.0 or the abolishment of Web 1.0 in the future. This can be elaborated through the following categorization of the five prosuming indicators (*prosuming skill*, *distribution*, *production*, *participation*, and *creation*).

Categorization of the five prosuming indicators

As seen in Figure 2, the indicator *prosuming skill* was assigned as Web 1.0 literacy, while both *distribution* and *participation* as Web 2.0 literacy. Besides, two indicators (*production* and *creation*) were proposed to indicate both Web 1.0 and 2.0 literacies. Based on the definition of *prosuming skill* in this paper, this indicator focuses more on individuals' own media production, which does not involve others' engagement. In other words, individuals have the *unique* authorship of what they produce. Considering this great match with the 'broadcasting' characteristics of Web 1.0, we assigned it to the category of Web 1.0 literacy. As discussed above, both *distribution* and *participation* focus mainly on individuals' social sharing in ideas and/or artifacts. Others are also allowed to make further contribution/revision to the existing media content. In this sense, every participant owns the authorship of the ideas/artifacts. Individuals may be able to embody/interpret one another's values, identities, and/or ideologies during these activities. All these can be well supported within the Web 2.0 rather than Web 1.0 environment. Thus, we decided to assign both *distribution* and *participation* into the category of Web 2.0 literacy. According to the aforementioned definitions of *production* and *creation*, both indicators involve not only individuals' own construction of ideas/artifacts (i.e., more Web 1.0 oriented), but also sometimes their incorporated/shared ideas and/or values (more Web 2.0 oriented). In this light, we suggested that they can reflect both Web 1.0 and 2.0 literacies. These categorizations are also represented by the proposed new divide in our framework (see the right dotted line).

Conclusion

Given the technical and socio-cultural characteristics of new media, individuals nowadays are expected to express satisfactory new media literacy. Grounded on Chen et al.'s two-continua (consuming-prosuming and functional-critical) framework, we have proposed ten fine-grained indicators to represent the concept of NML. Given the limited space issue, we do not elaborate more information here. More significantly, our framework proposed another new divide that distinguishes Web 1.0 from 2.0, with the latter well responding to a new era of media participation. However, a limitation of the current framework needs to be noted. In our framework, *creation* was used as an indicator for NML. However, we acknowledged the important role of creation and creativity in our framework and tried to define creation. During the development of instrument to measure creation, the research team encounters difficulties in self-report survey. Future research may consider alternative means to examine the *creation* dimension of NML if this framework is applied.

References

Aufderheide, P. & Firestone, C. (1993). *Media literacy: A report of the national leadership conference on media literacy*. Queenstown, MD: The Aspen Institute.

Anderson, S., & Balsamo, A. (2008). A pedagogy for original Synners. In T. McPherson (Ed.), *Digital Youth, Innovation, and the Unexpected* (pp. 241-259). Cambridge, MA: The MIT Press.

Berger, R., & McDougall, J. (2011). Media studies 2.0: A retrospective. *Media Education Research Journal, 2*(2), 5-9.

Blau, A. (2004). The future of independent media. *Deeper News, 10*(1), 1-48.

Boyd, D. (2008). Why youth love social network sites: The role of networked publics in teenage social life. In D. Buckingham (Ed.), *Youth, Identity and Digital Media* (pp. 119-142). Cambridge, MA: The MIT Press.

Buckingham, D. (2003). *Media education: Literacy, learning and contemporary culture*. Cambridge, MA: Polity.

Buckingham, D., Banaji, S., Burn, A., Carr, D., Cranmer, S., & Willett, R. (2005). *The media literacy of children and young people*. London, UK: Ofcom.

Buckingham, D. (2009). Power to the people? The past and future of amateur video. In Buckingham, D., & Willett, R. (Ed.), *Video Cultures: Media Technology and Everyday Creativity* (pp. 230-238). New York, NY: Palgrave Macmillan.

Buckingham, D. (2009). The future of media literacy in the digital age: Some challenges for policyand practice. Retrieved 22 September, 2011 http://medienimpulse.at/articles/view/143

Cappello, G., Felini, D., & Hobbs, R. (2011). Reflections on global developments in media literacy education: Bridging theory and practice. *Journal of Media Literacy Education, 3*(2), 66-73.

Cervi, L. M. P., Paredes, O., & Tornero, J. (2010). Current trends of media literacy in Europe: An overview. *International Journal of Digital Literacy and Digital Competence*, 1(4), 1-9.

Chen, D.-T., & Wu, J. (2011, July). *New media literacy in the 21th century society: Key findings, gaps and recommendations*. Paper presented at the National Association for Media Literacy Education, Philadelphia, Pennsylvania, USA.

Chen, D.-T., Wu, J., & Wang, Y.-M. (2011). Unpacking new media literacy. *Journal on Systemics, Cybernetics and Informatics, 9*(2), 84-88.

Cheung, C.-K. (2009). Media education across four asian societies: Issues and themes. *International Review of Education, 55*(1), 39-58.

Cope, B., & Kalantzis, M. (Eds.). (2000). *Multiliteracies: Literacy learning and the design of social futures*. London, UK: Routledge.

Eshet-Alkalai, Y., & Soffer, O. (2012). Guest editorial - Navigating in the digital era: Digital literacy: Socio-cultural and educational aspects. *Educational Technology & Society, 15*(2), 1-1.

Gee, J. P. (July, 2001). New times and new literacies: Themes for a changing world. In B. Cope & M. Kalantzis (Eds.), *Learning for the Future: Proceedings of the Learning Conference 2001* (pp. 3-20). Melbourne, Australia: Common Ground.

Gauntlett, D. (2011). *Media studies 2.0, and other battles around the future of media research*. David Gauntlet Kindle eBook. (ASIN: B005E9E3HI)

Hardey, M. (2007). The city in the age of Web 2.0 a new synergistic relationship between place and people. *Information, Communication and Society, 10*(6), 867-884.

Ito, M., Horst, H., Bittanti, M., boyd, d., Herr-Stephenson, B., Lange, P. G., . . . Tripp, L. (2008). *Living and learning with new media: Summary of findings from the digital youth project*. Chicago, IL: The MacArthur Foundation.

Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York, NY: New York University Press.

Jenkins, H., Purushotma, R., Clinton, K., Weigel, M., & Robison, A. J. (2006). Confronting the challenges of participatory culture: Media education for the 21th century (White Paper). Retrieved from the MIT website: http://mitpress.mit.edu/sites/default/files/titles/free_download/9780262513623_Confronting_the_Challenges.pdf

Laughey (2011). Media studies 1.0: Back to basics. *Three-D, 16*, 14-16.

Leaning, M. (2009). Theories and models of media literacy. In M. Leaning (Ed.), *Issues in information and media literacy: criticism, history and policy* (pp. 1-18). Santa Rosa, CA: Informing Science Press.

Leavis, F. R., & Thompson, D. (1933). *Culture and environment: The training of critical awareness*. London, UK: Chatto & Windus.

Lievrouw, L. A., & Livingstone, S. (2006). Introduction to the first edition (2002): The social shaping and consequences of ICTs. In L. A. Lievrouw & S. Livingstone (Eds.), *Handbook of new media: Social shaping and social consequences of ICTs* (pp. 15-32). London, UK: Sage.

Lim, S. S. & Nekmat, E. (2008). Learning through prosuming: Insights from media literacy programmes in Asia. *Science, Technology and Society*, *13*(2): 259-278.

Lin, T.-B. (2009). Navigating through the mist: Media literacy education in Taiwan. In C.-K. Cheung (Ed.), *Media education in Asia* (pp. 165-184). Dordrecht, Netherlands: Springer.

Lin, T.-B. (2010). Conceptualising media literacy: Discourses of media education. *Media education research journal, 1*(1), 29-42.

Lin, T. –B. (2011). Literacy in digital era: Discourses of media literacy and its role in Singapore education. In W. Choy & C. Tan (Eds.), *Education reform in Singapore: Critical perspectives* (pp. 66-79). Singapore, Singapore: Pearson.

Lister, M., Dovey, J., Giddings, S., Grant, I., & Kelly, K. (2003). *New media: A critical introduction*. London, UK: Routledge.

Livingstone, S., Van Couvering, E., & Thumin, N. (2004). Adult media literacy - A review of the research literature on behalf of Ofcom (pp. 1 - 86). London, UK: Office of Communications.

Manovich, L. (2001). *The language of new media*. Cambridge, MA: The MIT Press.

Ministry of Education. (2002). *The white paper on media literacy education*. Taipei, Taiwan: Ministry of Education.

National Association for Media Literacy Education. (2007). Core principles of media literacy education in the United States. Retrieved July, 2012 from http://namle.net/wp-content/uploads/2009/09/NAMLE-CPMLE-w-questions2.pdf

National Institute of Education. (2009). *TE21: A teacher education model for the 21st century*. Singapore, Singapore: NIE.

Newby, T., Stepich, D., Lehman, J., & Russell, J. (2000). *Instructional technology for teaching and learning: Designing instruction, integrating computers, and using media*. Upper Saddle River, NJ: Merrill.

Nichols, R. E. (2008). "Kind of like emerging from the shadows": Adolescent girls as multiliteracy pedagogues. In M. L. Hill & L. Vasudevan (Eds.), *Media, learning, and sites of possibility* (pp. 119-156). New York, NY: Peter Lang.

Ofcom. (2004). *Ofcom's strategy and priorities for the promotion of media literacy*. Office of Communications. Retrieved on 21, Dec, 2007 from http://www.ofcom.org.uk

O'Reilly, T. (2005). What is Web 2.0: Design patterns and business models for the next generation of software. *Communications & Strategies, 65*(1), 17-37.

Pink, D. H. (2005, December 11). Folksonomy. *New York Times.* Retrieved 1 June, 2008, from http://www.nytimes.com/2005/12/11/magazine/11ideas1-21.html

Postigo, H. (2011). Questioning the web 2.0 discourse: Social roles, production, values, and the case of the human rights portal. *The Information Society: An International Journal, 27*(3), 181-193.

Pratt, A. (2000). New media, the new economy and new spaces. *Geoforum, 31*(4), 425-436.

Pungente, J. J., Duncan, B., & Anderson, N. (2005). The Canadian experience: Leading the way. In G. Schwarz & P. U. Brown (Eds.), *Media literacy: Transforming Curriculum and Teaching* (pp. 140-160). Malden, MA: Blackwell Publishing.

Rice, R. (1984). *The new media: Communication, research and technology*. Beverly Hills, CA: Sage.

Schwarz, G. (2005). Overview: What is media literacy, who cares, and why? In G. Schwarz & P. Brown (Eds.), *Media literacy: transforming curriculum and teaching* (pp. 5-17). Malden, MA: Blackwell Publishing.

Share, J. (2002). *Media literacy is elementary: Teaching youth to critically read and create media*. New York, NY: Peter Lang.

Shih, E. C. F. (1998). Conceptualizing consumer experiences in cyberspace. *European Journal of Marketing, 32*(7/8), 655-663.

Thoman, E., & Jolls, T. (2008). Literacy for the 21st century: An overview & orientation guide to media literacy education (2nd ed). Retrieved 1 October, 2008, from http://www.medialit.org/sites/default/files/01_MLKorientation.pdf

Turkle, S. (1995). *Life on the screen*. New York, NY: Simon and Schuster.

Wu, S., & Chen, S. (2007). *Media literacy education*. Taipei, Taiwan: Chiuliu.