

Evaluating Media Literacy and Media Education Competences of Future Media Educators

Camille Tilleul, Pierre Fastrez & Thierry De Smedt

The definition of media literacy in terms of a set of coherent competences, associated with assessment tools to measure them has attracted a growing interest in the research community studying media literacy. However, whereas a variety of conceptual frameworks have been proposed, empirically-validated assessment tools for media literacy are still rare, and so are empirical evaluations of media literacy competences (notable examples include Hobbs & Frost, 2003; Quin & McMahon, 1993; Arke & Primack, 2009). In this chapter, we present an empirical evaluation of the media literacy and media education competences of future media educators. The evaluation is part of the scientific tutoring of a new Master's program in Media Literacy Education opened in September 2013 in a French-speaking Belgian college, which aims to train professional media educators.

The overall evaluation of the Master's program includes the diachronic assessment of the first cohort of students' media literacy and media education competences, in order to measure their improvement. The assessment involves three steps, as students will be tested three times in total: once at the outset of their Master's program, once at the end of their first year of training, and once at the end of their Master's program (i.e. at the end of the second year of training). In this chapter, we present the assessment's theoretical framework and method, as well as the results of the first tests. First, we define the central concepts of the evaluation's theoretical framework and the methodology that was used to undertake the evaluation. Second, we present the results of the first phase of the evaluation. Finally, we discuss the limitations of the tests and how we plan to adapt them in the near future.

Theoretical framework

Competence

The concept of competence was defined by many authors in multiple fields of research. Here, we will focus on a few of the essential traits of its definition in the field of pedagogy. First, *competence* must be defined with reference to intentional action: a competence becomes manifest in contexts where an individual acts towards a goal. One may speak of competence when an individual *puts* their knowledge and skills *to relevant use* in a variety of situations (Scallan, 2004). Second, being competent implies the efficient articulation of *different internal and external resources* within a family of situations (Tardif, 2006). A common distinction among internal resources differentiate between knowledge, skills, and attitudes (Bourg et al., 1989). Finally, the concept of competence implies the ability to face *novelty*. As Rey et al. (2012, p. 13) put it “competence refers to unique combinations of skills manifesting an original and non-stereotypical adaptation to novel situations”.

Based on this definition, competence can be opposed to the capacity. Capacities are acquired through simple and repetitive exercises that allow an individual to learn to reproduce some behavior in a constant, invariable way (e.g. the ability to multiply numbers).

In the context of the evaluation presented in this chapter, we sought to assess the students' levels of competence (i.e. how they put a variety of relevant internal and external to good use when faced with novel problems) in two domains. On the one hand, as future media educators, students needed to be evaluated with respect to their media education competences, i.e. their ability to plan and design media education activities. On the other hand, as the ability to educate others to media depends on one's own media literacy (Brouwers, 2010), we also evaluated their media literacy competences.

Media literacy as competences

Media literacy has traditionally been defined either as a set of themes or transversal key concepts (such as languages, representations, audiences, and productions) that can be applied across a wide range of media, to be mastered by individuals (Masterman, 1985; Wangermée, 1995; Buckingham, 2003; Kellner & Share, 2005), or as a set of competences to be developed by them. In this second approach, common definitions include the ability to access, analyze and evaluate, and either communicate (Aufderheide, 1993) or create (Livingstone, 2003; Buckingham, 2005) media messages in a variety of contexts.

In an attempt to extend and further specify these definitions, we defined (Fastrez, 2010; Fastrez & De Smedt, 2012) media literacy as the competences required to perform different tasks (reading, writing, navigating, and organizing) on a variety of media considered as informational, technical and social objects.

Media as informational, technical and social objects

Media (messages and devices) can be, in turn, regarded as informational, technical, and social objects. They are informational objects, designed to represent things, real or fictitious, different from themselves, through the use of different sign systems. As representational systems attaching a signifier to a signified, they possess both formal properties, referential objects, and specific modes of signification. Users of a given media can turn their attention to these three classes of properties alternatively. On the one hand, all media have formal properties. A movie has a duration, a drawing has colors, a theater stage has a size, a photograph has a grain, a software window has an aspect ratio. On the other hand, any media refers to something other than itself. A documentary recounts historical events, a video game immerses its players into a magical world, a poem expresses a feeling. The form of media (its signifier) points to its referent (its signified) in a certain way. The whole conceptual apparatus of semiotics can be used here to characterize these modes of signification, which depend both on the types of signs they use (e.g. text, still or animated images, sound) and the types and genres of media that combine and arrange them in many different culturally entrenched configurations. Adopting a similar standpoint, Lebrun-Brossard and Lacelle (2011) define multimodal media literacy as including a general semiotic competence, specific textual competences for each semiotic system (text, image, sound, hypertext, ...), and a multimodal competence (for the joint use of different semiotic systems).

Media also result from technical processes (e.g. a newspaper, a movie, a website are all produced using different technical apparatus and infrastructure), or are themselves designed to produce or disseminate other media objects (e.g. a blu-ray player, a search engine, a cell phone are all objects requiring technical interaction to make them function).

Finally, media are social objects. They point to the individual and institutional agents who produce and diffuse them, thereby transforming "the spatial and temporal organization of social life" (Thompson, 1995, p. 4). They can also be examined with respect to their pragmatics: the intentions of these agents, the positions they attribute to them and to their recipients, the effects they produce on these recipients (Meunier & Peraya, 2004). They also carry, support, oppose or modify cultural models (Holland & Quinn, 1987; Carey, 1989). Finally, media users develop uses and practices through which they domesticate them (Silverstone & Hirsch, 1994; Brotcorne et al. 2010). (This list of social aspects of media is of course open, and by no means exhaustive.)

Four types of media tasks

Among the tasks related to the exercise of media literacy, we distinguish between those of reading and writing (centered respectively on the reception and

production of a single media object), and those of navigation and organization (centered respectively on the reception and the generation of a collection of related media objects).

In a mediated environment, the competent reader is able to decode, understand and evaluate a variety of media objects: a novel, a fiction film, an editorial, a blog, but also the interface of a search engine, or the instruction guide of a drug. Potential ways of reading and interpreting can be focused on what these media represent, the semiotic systems they use, or their format (informational reading), on the technical process underlying their production (technical reading), on the institutional context of their production, the intentions of their authors, the cultural stereotypes they reinforce (social reading), etc.

As far as navigation is concerned, we distinguish between searching and exploring collections of media objects. The former involves searching for and finding media meeting specific search criteria. The latter involves identifying and locating the formats, genres, technologies, actors, etc. specific to a given media environment. As for reading, the search criteria and the milestones of exploration can either be informational, technical or social.

Media writing competences are those required for the creation and distribution of media productions, whether individual or collective. They involve the appropriation of languages and genres that these productions make use of (informational writing), the mastery of the technical operations they call for (technical writing), and the activation of various interpersonal and institutional relationships (social writing).

As for organization competences, they include both the ability to conceptually categorize a set of media with *ad hoc* taxonomies (depending, for example, on the genre(s) they belong to, the audience(s) they target, or the technical standard(s) they meet), and the ability to implement tools that reify these forms of organization into personal spaces of information (Jones, 2008): a personal video library, internet favorites, file or email folder hierarchies, etc. The organization of media as informational objects implies, for example, the competence to keep, organize, annotate, and archive documents (e.g. emails, photos, movies, music tracks) found, produced, or shared throughout one's media practices. The organization of media as technical objects (e.g. equipment, software, network services) includes the ability to situate alternatives in terms of available media technologies, and to categorize them according to their potential interoperability. The organization of media as social objects corresponds to the ability to organize mediated relationships, both as a receiver (e.g. to position oneself with respect to different ways of reading a given media) and as an interactant (e.g. to organize contacts and interactions that one creates and maintains through digital media, such as social networking sites).

The articulation of the four types of media tasks with the three dimensions of media objects generates a twelve-cell matrix defining media literacy as the

set of competences required to read, write, navigate and organize media as informational, technical and social objects (cf. Figure 1).

Figure 1. A matrix of media literacy competences

	Informational	Technical	Social
Reading			
Writing			
Navigating			
Organizing			

This model of the competences that compose media literacy and how they relate to one another was used as a conceptual framework for the empirical evaluation presented in the next section of this chapter.

Media education competences

Media education competences are distinct from media literacy competences in the same way as media education is distinct from media literacy. If one considers media education to encompass any educational initiative designed to develop the media literacy of its beneficiaries, then media education competences consist in the ability to design and implement efficient media education initiatives. Specifically, the media education competences that were assessed as part of the empirical evaluation presented in this chapter included the ability to:

- make a diagnosis to determine the scope and nature of the media education activity, i.e. report on the activity’s context, partners and intended audience;
- based on this diagnosis, define educational objectives;
- select and implement a pedagogical approach adapted to the context of the activity and the educational objectives;
- choose adequate media material to support the activity;

- design and implement assessment tools for the activity;
- plan the different stages of the activity and produce specifications for each.

Method

Participants

All thirteen students enrolled in the first year of the new Master's program in media literacy education participated in the evaluation. Seven of them have a background in communication sciences (five hold Bachelor's degree in communication, two hold a Master's degree in journalism), and six of them have a background in education (two hold a Bachelor's degree in early childhood education, and four hold a Bachelor's degree in secondary education). The cohort includes eight women and five men. Students were not compensated for their participation in the assessment presented in this chapter, which was independent from the exams they had to pass as part of their curriculum.

Test tasks and procedure

The assessment of the students' media education and media literacy competences was based on a series of five test tasks that presented them with a novel situation. The first test task focused on their media education competences, and the four other focused their media literacy competences related to reading, writing, navigating and organizing.

Students completed the five test tasks as part of an interview directed by the first author of this chapter. For each test task, students were asked to read the task instructions and take time to prepare their answer. They were provided with paper and pens. The full interview had an approximate duration of two hours. It was recorded on a laptop computer using Techsmith Morae®, which captures the computer's screen activity as well as the subject's face and speech. As they used the computer, students were required to comment on their actions.

The instructions for the five test tasks, as they were submitted to students, are presented below.

Test task #1 : media education competence

The following instructions were provided to the students: "As a Social Sciences teacher, you are asked to carry out a pedagogical activity in your third-grade general education classroom (fourteen-year-old students). The lesson's topic is *avatar education, or how to design one's image on social networks*. Please define and justify :

1. the diagnosis regarding your students' needs and the scope of the intervention
2. your diagnosis technique (i.e. the process that led you to make this diagnosis)

3. the objectives of the intervention
4. the intervention's assessment tools
5. the pedagogies you intend to use
6. the technical means you intend to use
7. the human resources you intend to involve in your project
8. the timing / schedule of the intervention
9. the financial and technical implications of the project."

Test task #2: navigating competence

Students were asked to use a documentary database containing an array of pre-selected media resources related to the lesson topic. Their task was to browse the database and select the (five to ten) documents that seemed most relevant to be used as part of their activity. Students were invited to describe how they proceeded to select the documents and why they chose them.

Test task #3 : reading competence

The following instructions were provided to the students: "In order to plan your educational activity, you selected some documents that you are going to read carefully and compare with each other. We ask you to read and compare the serious game "2025 Ex Machina" that you see on your screen with the paper by Serge Tisseron (summary and introduction) that is provided to you. Please explain the various possible comparisons you can make between these two media."

Test task #4: organizing competence

The following instructions were provided to the students: "You have read several documents from a media database to prepare your presentation. We ask you to organize these documents. You will find the database you used for task #2 on your computer screen. You now have to organize it by using different criteria. Can you choose the criteria you will use to organize the database so it is usable by a colleague?"

Test task #5: writing competence

The following instructions were provided to the students: "Based on the documents that you read and selected, you are now asked to produce an original educational medium on the topic 'avatar education or how to design their profile picture on social networks.' for another class. You have noticed that the students in your twelfth-grade class (seventeen-year-olds) are all connected to one another online, and only use nicknames or avatars known only to themselves. By now, they should be able to present themselves to other

people (parents, teachers, officials, etc.) in other ways (as leader of a youth movement, as a member of a sports club or an association, as a customer, as a future higher education student, etc.). Design a media that will allow them to integrate a wider and more heterogeneous network than their circle of close friends into their online life.”

For practical reasons, we could not ask the students to design and produce a new medium from scratch as part of the assessment. Instead, we asked them to imagine the medium, describe it, and justify their design choices. Students could use the computer to sketch their design.

Assessing levels of competence

The students’ media education and media literacy competences were assessed using a three-level scale of competence. The five test tasks were designed as complex problems that students could tackle from a variety of perspectives. The way students adopted these different perspectives was used as an indicator of the different dimensions of their competences. Hence, each dimension was rated in three levels.

In the first task (media education competence), the task instructions specified the dimensions explicitly: diagnosis, objectives, assessment tools, pedagogy, technical means, human resources, scheduling, financial and logistical means. For each of these dimensions, a rating between 0 (lowest competence level) and 2 (highest competence level) was assigned to each student’s answer, based on its completeness, its accuracy, and its consistency with the other dimensions.

In the four test tasks dedicated to media literacy, students could consider the media to be navigated/read/organized/written as information objects (theme, languages and representations, form), as technical objects (technical production processes and technical qualities) or as social objects (authors, intentions, audiences, and effects).

Table 1. The eight dimensions evaluated in tasks #2 to #5

Informational Dimension	Technical dimension	Social dimension
• topic of the document • languages and representations • form of the document	• techniques used to produce the document and technical qualities of the document	• author(s) of the document • intentions of the author(s) • intended audience(s) of the document • potential effect(s) of the document

In their answers, students spontaneously integrated some or all of these eight different dimensions. When they didn’t, they were explicitly prompted to do so. For each of these dimensions, a rating between 0 (lowest competence level)

and 2 (highest competence level) was assigned to each student’s answer, based on the criteria detailed in Table 1.

Table 2. Rationale for the assignment of ratings to the students’ answers to test tasks #2 to 5

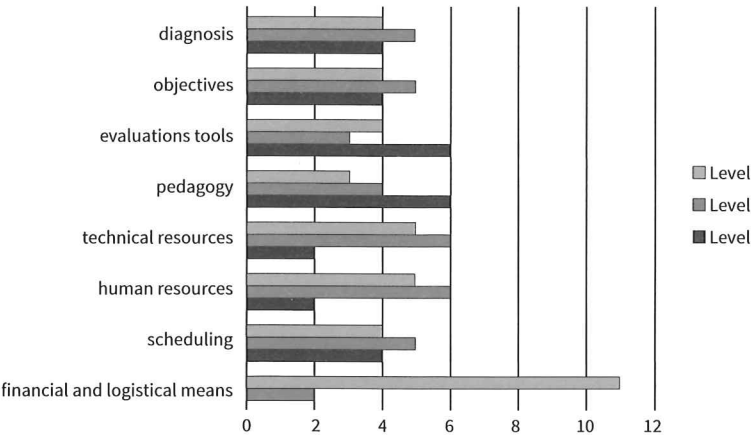
Rating	Rationale
2	The student’s spontaneous answer includes the dimension, and treats it thoroughly, accurately, and consistently with the other dimensions
1	The student’s spontaneous answer includes the dimension, but treats it only partially or is inconsistent with respect to the other dimensions; or the student considers the dimension only after being prompted by the interviewer.
0	The student is unable to consider the dimension even after being asked to do so.

Results

Media education competences

The majority of students demonstrated an intermediate level of media education competences (Figure 2). While students appeared to have the least difficulties in choosing a relevant type of pedagogy and appropriate evaluation tools for their educational activity (with half of the students reaching the maximum level on our scale), the determination of educational objectives based on a preliminary diagnosis, as well as the scheduling of the activity, seemed to cause a little more trouble. Students especially seemed to struggle with the definition the technical and human resources required by their activity, and even more with that of its financial and logistical terms.

Figure 2. Distribution of students in competence levels, for each media education competence dimension



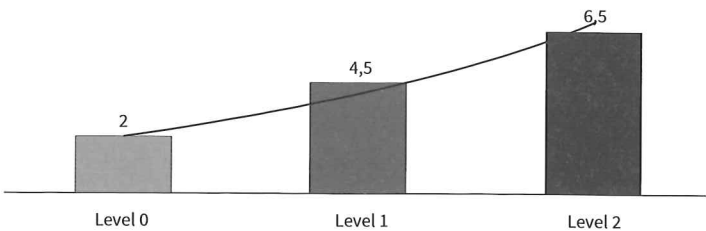
Media literacy competences

Students demonstrated variable levels of media literacy competence, depending both on the test tasks and on their dimensions.

In terms of media dimensions (i.e. informational, technical and social), a general trend emerges across all tasks. Figures 3, 4 and 5 visualize these trends by averaging the distribution of students in terms of competence levels for each of these dimensions, across the sub-dimensions (e.g. theme, languages and representations, and form for the informational dimension) of all four test tasks.

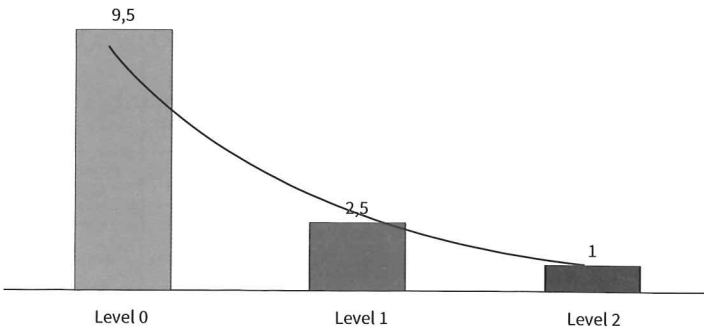
Overall, the informational dimension of media appeared to be the one students grasped most easily.

Figure 3. Average number of students by competence level for the informational dimension, all tasks



Students had the most difficulties in navigating, reading, organizing or writing media following the technical dimension. Two thirds of students were rated at the lowest competence level on this dimension.

Figure 4. Average number of students by competence level for the technical dimension, all tasks



With respect to the social dimension of media, students showed moderate levels of competence. Only one fifth of students (on average) are at the highest level of our scale. However, the social sub-dimensions yielded different results. Specifically, students had trouble considering the producers and the potential effects

of media in all four tasks. They were able to navigate and read media in terms of their intended audiences, but had a hard time doing so when organizing or writing media. Their ability to identify the intentions underlying the production of media varied from task to task.

Figure 5. Average number of students by competence level for the social dimension, all tasks

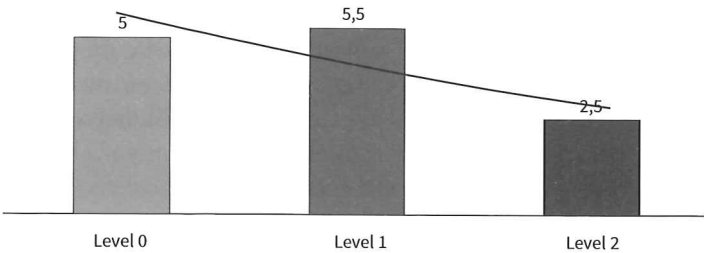


Table 3 shows the average number of students for each level of competence across each dimension of each task.

Table 3. Average number of students in each level of competence across tasks and dimensions

	Competence levels		
	Level 0	Level 1	Level 2
Task #2: navigation competences			
informational dimension	1,67	6,00	5,33
technical dimension	5,00	6,00	2,00
social dimension	2,25	7,00	3,75
Task #3: reading competences			
informational dimension	1,33	5,00	6,67
technical dimension	11,00	1,00	1,00
social dimension	3,00	5,00	5,00
Task #4: organizing competences			
informational dimension	5,33	3,00	4,67
technical dimension	11,00	1,00	1,00
social dimension	9,33	2,67	1,00
Task #5: writing competences			
informational dimension	0,33	3,67	9,00
technical dimension	11,00	2,00	0,00
social dimension	5,00	4,67	3,33

Table 3 reveals differences in the way competence levels are distributed among students. Some competences are either mastered by the majority of students, or by almost none of them. Competences related to the informational dimension of the activity of writing media are in the first category: on average, nine out of thirteen students reached level 2 in the corresponding subdimensions. Abilities related to reading, organizing or writing media from a technical standpoint, as well as to organizing media from a social perspective, lie in the second category: overall, three quarters of the students show no competence in the corresponding subdimensions. Other competences vary widely in the way they are mastered by the students of our sample. This is the case for the information organization of media, as well as for the social dimension of media reading and writing.

Two student profiles, but no differences

As we mentioned earlier, the students enrolled in the Master's program have different backgrounds: before enrolling, some studied communication sciences, others studied education. However, when we sought to compare the results of these two groups of students, we found no significant difference. Students, wherever they come from, share the same ability to consider media in their informational dimensions, and the same difficulty in grasping their technical dimensions as well as some of their social implications. This is quite a surprising result considering the fact the evaluation occurred at the beginning of their training, before their engagement in the curriculum could possibly equalize their potential differences.

In the article defining the matrix of media literacy competences that was used as a framework for the evaluation presented in this chapter, Fastrez (2010) supported the idea that traditional school education developed skills primarily related to the informational dimension of media, with less focus on technical and social competences. In the same article, Fastrez posed the hypothesis that the traditional school education system also favored competences in reading and writing, rather than navigation and organization. The analysis of the performances developed by the thirteen students who participated in the tests provides partial evidence confirming these two hypotheses. Obviously, an investigation on a much larger scale remains indispensable to fully validate them.

Discussion and future work

Limitations of the current evaluation method

As much as it is an empirical evaluation of media literacy and media education competences, the study presented in this chapter is also an exploration of the methods of media literacy and media education assessment. The method we described is, in many respects, still work in progress.

On the one hand, as the interview typically lasts about two hours, it creates a risk of seeing the interviewees lose their concentration over its course. Moreover, the fixed order of the test tasks in the current protocol concentrates this risk on the two last tasks, which may generate biased results. Hence, reducing the duration of the interview (while making sure to keep the same indicators), and redesigning the protocol so that the task order can be randomized, appear to be necessary.

On the other hand, we identified a number of shortcomings in the test tasks. First, the instructions for the first test task (focused on media education) should be revised. The fact that it specifies each of the different dimensions of a media education activity prevents us from observing what dimensions students think of spontaneously when they plan one. A revision of these instructions would allow us to apply the same rating rationale (see Table 2) for all test tasks.

Second, in the navigation task, students only navigated a database of preselected documents. A future version of the same task should allow students to actually perform an open search for relevant media, and include competence indicators that make inter-subject comparisons possible regardless of the fact that their search results are different.

Finally, the writing test task, in which students were asked to create a medium, was often confused with the first task for which they were asked to plan an educational activity. In the future, to avoid this confusion, the writing task could either be anchored in a totally different context than that of a media education activity (e.g. draft a blog post, or the storyboard of a YouTube video), or become a part of the media education task, in which students would be asked to create a media message in addition to those they selected in their navigation task.

Future work

At the stage of research we have just described, we can already draw some interesting unexpected conclusions about the educational profile and media literacy of the first thirteen, students of this new two-year Master's program in Media Education. As we communicate this information to the faculty involved in the program, we can now help them better adapt their teaching activities to their current students.

This first step of our research, however, will become fully meaningful when we compare the levels measured at the beginning of training, with those that we will measure one year later, in June 2014, and again one last time, when the students come to the end of the second year of their training, in June 2015.

The full evaluation, including all three phases of assessment, will serve to measure the students' competences progression and the effectiveness of the program, but also, hopefully, to refine our assessment tools by trying to make it both easier to implement and free of still unidentified ambiguous elements which may distort its accuracy and therefore limit its pedagogical utility.

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