

Chapter 12

Emergent Digital Multiliteracy Practices at the Core of a Museum–School Partnership



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Abstract This chapter presents an instructional approach for undertaking museum–school partnerships in the twenty-first century in response to the increasingly multimodally mediated world we are living in. Employing a Design-Based Research (DBR) approach, this chapter describes the design, implementation and evaluation of a museum–school partnership that unfolded in 13 weeks for the design of a student-generated virtual museum to support STEM curriculum for K-12 primary education in the island of Cyprus. Findings from a combination of qualitative and quantitative methods of data collection, indicate that the museum–school partnership unfolded as an emergent multiliteracy practice. Students engaged in the learning process as active designers and multimodal learners; in such a process, they enacted repertoires of digital literacy that reflected critical thinking competencies and higher order thinking.

Introduction

This chapter uncovers the narrative of one empirically informed initiative to address the question: How can a museum–school partnership be designed and implemented to enhance the literacy repertoires, in particular, but not exclusively, for culturally and linguistically diverse (CLD) students? The intention was to introduce a theory-based, empirically tested framework for museum–school partnerships, in an attempt to propose, analyze and discuss a new emergent practice to support diversity and multiliteracies teaching and learning for the twenty-first century. Particular emphasis is given on how the unique nature of museums can potentially facilitate literacy learning of all students, regardless of their background.

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Background to the Research

There are a few key concepts that act as touchstones in this investigation. Throughout this chapter, I use the term literacy to refer to “the flexible and sustainable mastery of a repertoire of practices with the texts of traditional and new communication technologies via spoken, print, and multimedia” (Luke & Freebody, 2000, p. 9). Nevertheless, in this definition we incorporate a key proposition concerning the nature of literacy (adapted from Barton & Hamilton, 2000, p. 7): that literacy is productively understood as an open-textured category of sociocultural practice. Closely related is the notion of a “repertoire,” which refers to a toolkit (Gutiérrez & Rogoff, 2003), “an orchestrated set of capabilities and dispositions for acting purposefully in the world” (Alloway, Freebody, Gilbert, & Muspratt, 2002, p. 127). In other words, repertoire refers to people’s diverse ways of engaging and developing ‘cultural capabilities’ in different activities as a result of participation in a range of cultural practices (Pacheco & Gutiérrez, 2009, p. 74).

Concurrently, it is of equal importance to delimit how the term museum–school partnership is used in this research, to allow for a better understanding of the objectives and relationship developed between the museums and schools involved. For the purposes of this chapter, the term museum–school partnership will be used to refer to the goal towards which the intervention implemented aspires to reach, rather than the completed product of a fully formed partnership in the specific context. This research therefore describes the journey towards the ideal of collaboration and partnership through the programme implemented. Both myself as the museum educator and classroom teacher have contributed to the structure and content of the intervention (Freedman, 2011), as well as the implementation and evaluation of the intervention.

Importantly, the practical aspect of the activities involved in the intervention implemented during the fieldwork, entailed the use of the concept of virtual museums and how students engaged in designing their own virtual museum. Virtual museums are perceived as a multidisciplinary research field which is often linked with Technology Enhanced Learning (TEL) (Goodyear & Retalis, 2010; Jackson & Adamson, 2009; Prosser & Eddisford, 2004). These environments through their multimodal technologies provide new and fresh experiences of digital cultural heritage, or connect different museum collections (Cilasun, 2012, pp. 2–3; Giaccardi, 2006). Incorporating new media technologies to fulfill the museums’ educational provision has been widely acknowledged by practitioners and museum educationalists (Anderson, 1999, p. 2; Dierking & Falk, 1998), yet it was not until the early 2000s that it gradually became part of constant dialogues in a European context for developing practice that meets the challenge of the digital divide (Parry, 2001) and cultivating the individual empowerment which derives from the free and equitable access to information (Abid, 2002).

Conceptual Framework

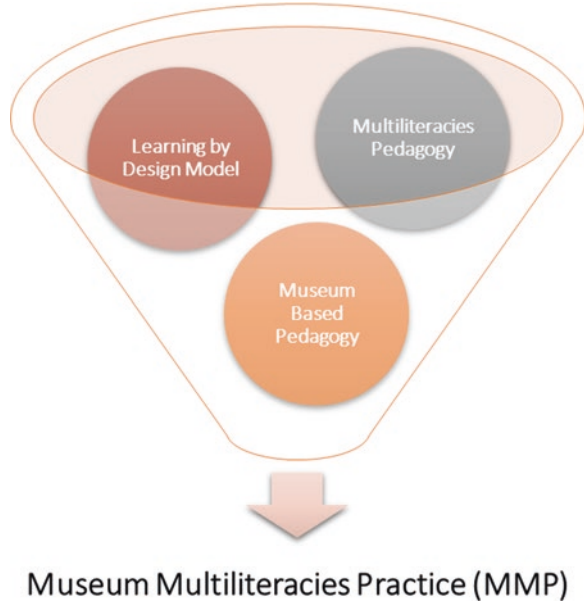
This research draws from a rich network of theoretical views, chief among them: sociocultural, socio-constructivist theories, and social semiotics. Working within the grounds of the theoretical conceptualizations discussed previously, the “Museum Multiliteracies Practice” (MMP) framework (Fig. 12.1) utilizes three interrelated pedagogies addressing learning for culturally and linguistically diverse students (Savva, 2016a).

Searching for a pedagogical model that addresses cultural diversity while encompassing the demands for the competent and flexible learners of the twenty-first century, I was introduced to multiliteracies pedagogy (New London Group, 1996, 2000). Cope and Kalantzis (2000) are among those who introduced the term “multiliteracies,” and elaborated on the potentials of a “Pedagogy of Multiliteracies.” A pedagogy of multiliteracies is posited as “a teaching and learning relationship that potentially builds learning conditions that lead to full and equitable social participation” (New London Group, 1996, p. 60). Cope and Kalantzis (2000, p. 239) stress that there is nothing radically new in a multiliteracies pedagogy; prevailing pedagogy has simply been repackaged in order to expand the scope for literacy by viewing many types of expression and communication as literacies, whether formal or informal; spoken, gestured, written or graphic; official or unofficial (Ryan & Anstey, 2003, p. 15).

Kalantzis and Cope (2005, p. 72) have extended the multiliteracies pedagogy through the Learning by Design model (LbD) which informs the MMP framework. Learning by Design is building into the curriculum the idea that not every learner will bring the same life experiences and interests to learning (Kalantzis & Cope, 2012), as well as acknowledging that every learner is not on the same page at the same time (Kalantzis & Cope, 2005). Anstey and Bull (2004, 2006, p. 34) identify these different domains or identities collectively as Discourse Worlds, and suggest that students draw on two in particular to make meaning, their Lifeworld and their School-Based World. These worlds overlap and inform one another. A truly meaningful multimodal integration in schools would require that teachers draw on the key components which comprise school literacies, and use them in combination with outside of school literacies for students to engage attentively with and for others to position themselves in the world.

The preliminary literature review for this research suggested that the goals and practice of multiliteracies pedagogy could be implemented in the context of museum teaching and learning to enable social inclusion and meaningful participation. Nevertheless, it was critical for the design of the MMP, “to re-conceptualise what constitutes museum education and museum literacy before addressing a creative synergy between the school and the museum” (Savva & Souleles, 2014, p. 121). Viewing museum as a learning arena, redefines the goals and strategies of educators in relation to their teaching and the museum curricula; such a view fits the incorporation of museum learning into the multiliteracies concept. In these conceptualizations of museum learning, it is imperative to consider also the introduction of digital

Fig. 12.1 The pedagogies interacting in the Museum Multiliteracies Practice framework (Savva, 2016a)



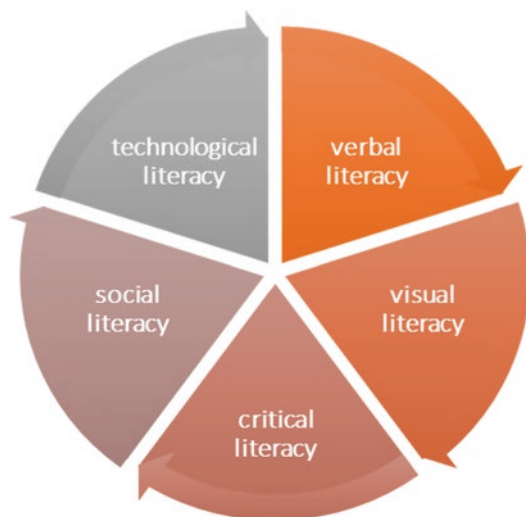
cultural heritage in the museum scene within the context of museums operating in a digital age (Parry, 2010). Because museum exhibits¹ make meaning through multiple media, multiple modes, and multiple symbol systems, the literacy practice of museum visiting can be also viewed as a multiliteracy.² Schwartz's (2008) work supports my theoretical proposition here. He proposed a museum-based pedagogy as opposed to traditional museum education.

Schwartz highlights that museum-based pedagogy differs, in that its main goal is “the teaching of verbal, visual, technological, social, and critical literacies (Fig. 12.2); not museum literacy, which is the ability to access the museum’s cultural and intellectual resources” (Schwartz, 2008, p. 29; Stapp, 1984). Museum-based pedagogy, thus appears to be working within the affirmations of multiliteracies pedagogy. This contributes to acknowledging “the importance of social and material factors in determining students’ empowerment and successes” (Schwartz, 2008, p. 29).

¹ The act of creating an exhibit is parallel to the act of producing knowledge.

² An interesting project is the “Museum Literacy Project” in 2008–2010 involving nine different museums, administrations, and training institutions based in five European countries, supported by the EU programme Lifelong Learning—Grundtvig Learning Partnerships 2008. The project focus was on museums and audiences with low schooling levels, and how museum literacy can be reached and maximize the museum experience for these audiences.

Fig. 12.2 The literacies in museum-based pedagogy (Savva, 2016b)



Research Design

To test the feasibility of the framework in a real life setting, a design-based research (DBR) methodology was utilized to undertake the research using both qualitative and quantitative data collection methods. DBR is an emergent paradigm of research which involves cycles of iterative development of solutions as applied to pragmatic and complex educational problems in schooling contexts (McKenney & Reeves, 2012). The approach can be characterized as intervention-centered, theoretically informed, goal oriented, iterative, mixed modality in design, and pragmatic (Reinking & Bradley, 2008, p. 17).

The research unfolded in three phases: the preliminary stage, the prototyping stage and the implementation and evaluation stage. In particular, an intervention, the Living Museum Partnership (LMP), was designed, implemented and evaluated in 2012, with a group of primary students coming from various cultural and linguistic backgrounds. The focus is on the experiences of four schoolteachers, two museum educators, and 36 primary students aged 10–12 years old in the island of Cyprus, engaged in the multimodal design of a virtual museum and a year-long museum project. It was decided to capitalize on situated practice by focusing on the need to deepen awareness about a local environment problem near the school area as part of the year of environmental awareness at the school (Savva, 2016a). Each prototype or cycle entailed particular developmental multiliteracies-based activities, although there was flexibility to adjust according to the participants' suggestions and needs. Thus, the curriculum itself was based on the world of students' designed and designing experiences, because they were engaged in meaningful and relevant literacy practices related to their sociocultural context. The intention was to develop and improve both end results of design research efforts: the educational

intervention under development; and its accompanying design principles (Nieveen & Folmer, 2013, p. 156).

To assist interpretation, a hybrid methodology of qualitative methods of thematic analysis—identification of emerging themes (Daly, Kellehear, & Glikzman, 1997)—incorporating both inductive (data-driven) and deductive (a priori template of codes) methods was employed. To assess the effective design of the LMP intervention, the evaluation was based on the cognitive, interpersonal, group, resource, and institutional level criteria proposed by Collins, Joseph, and Bielaczyc (2004). The above intertwined criteria informed the data collection, analysis, and the interpretation during the assessment phase of the research. Each evaluation level had key indicators which were employed in the judgment of the impact of the LMP as summarized in Table 12.1.

Emergent Students' Digital Multiliteracy Practices Observed

In addressing the ways in which the LMP acted in terms of its contribution to students' digital multiliteracy practices, this section takes a closer look into one group's experience through a narrative approach to documented assessment termed

Table 12.1 The key indicators for judgment of the impact of the LMP and implementation of the new approach during the final intervention

Evaluation criteria	Characteristics	Data collection
Cognitive	Assessment of students' prior knowledge and evolution in thinking	Observations of students' visual representations (e.g., storyboard creations and mockup exhibition rooms) and verbal explanations. Print Evaluation sheet Rubric (online formative assessment scheme)
Interpersonal	Student-to-student interactions Student-to-teacher interactions	107 Observations during the fieldwork and 12 supplementary interviews field notes
Group	Group dynamics Engagement in the intervention: a sense of belonging	59 Observations and field notes.
Resource	Availability and use of print and multimodal texts	45 Semi-structured interviews and surveys
Institutional	School culture and parents' support; School leadership support.	16 Semi-structured interviews and surveys with staff

“learning stories” (Carr, 2001). In relation to learning stories, these draw on a sociocultural context and have been defined as including “situated learning strategies plus motivation—participation repertoires from which a learner recognises, selects, edits, responds to, resists, searches for and constructs learning opportunities” and, as “being ready, willing and able to participate in various ways” (Carr, 2001, p. 21).

This section provides a brief outline of the profiles of the three student participants in Group A coming from culturally and linguistically diverse backgrounds with varied learning levels and difficulties.³ Before discussing their knowledge journey during the LMP, Group A students’ literacy identities are profiled, to provide a glimpse of their past experiences with aspects of their existing literacy repertoire during everyday school activities, previous education, and socioeconomic and cultural background as individuals (Table 12.2). These insights were developed from intensive observation throughout the field study and from informal interviews with teachers and the students’ families.

As shown in Table 12.2, the students in Group A had similar family and cultural backgrounds, and socioeconomic status. Their diversity was in terms of their different individual attributes evident also in an activity called “Diary Notes,” enacted prior to the implementation of the LMP. Their interests ranged from art and fashion to music, football, and computers. These students were originally assessed by their teachers as belonging to the assisted competence level (Sergey and Olga) and the autonomous competence level (John). Following the enactment of the LMP, John reached the third and higher level of performance (collaborative competence level), while Sergey and Olga were mainly assessed as belonging to the autonomous level. The excerpts and discussion that follows, indicates these students’ knowledge journey over the course of the LMP through the different literacy events.

The Learning Stories

Experiential Knowledge

The design of the induction session of the LMP involved connecting learning with the diverse life-worlds of the students through activities such as the “Mystery Box” which enquired into students’ personal experiences with museums (“experiencing the known”), and reading and commenting on fictional characters’ experiences of museums during the “Stick to it” activity (“experiencing the new”). The following excerpts are from a literacy event between members of Group A and the principal researcher, during the “Mystery Box” activity.

³Pseudonyms are used for all students mentioned in this research.

Table 12.2 Profiles of students in Group A

	Sergey	John	Olga
Family background	Both parents work Second born of three Christian Orthodox	Both parents work First born of two Christian Orthodox	One parent works First born of two Christian Orthodox
Interests/life-worlds	Music Football	Music Computers	Art Fashion
Preferred multiple intelligences	Kinesthetic Intrapersonal	Logical Linguistic Intrapersonal	Kinesthetic Logical
Academic performance	Low—prefers and excels in practical activities	High—enjoys solving problems, Excels in Maths and Science	Indifferent to most subjects except artistic ones
Literacy performance on MPAZ prior to the enactment of the LMP	Assisted level competence	Autonomous level competence	Assisted level competence
Literacy performance on MPAZ prior to the enactment of the LMP	Autonomous level competence	Collaborative level competence	Autonomous level competence

Seeing the box. Enthusiasm. Reluctance to discuss. Reading the questions for the group ... [FN, Gr.5].

Hesitant and with difficulty...

Olga: What was the most impressive thing that you found in a museum? What did you like the most?

No answer.

John: Interesting things?

Researcher: Exactly.

John: Like ... I've seen a big picture, it was nice, and it was so big.

Researcher: You mean like a painting?

John: Yes.

Sergey: The first iPhone.

Olga: The mouth of a shark.

Researcher: Where was that?

Olga: I was in a Russian museum...

....

John: What would you like to see in a museum? Hm, I know!

Researcher: Wait, let's see what the rest can think of first.

Sergey: I want to see a научная фантастика (science fiction in Russian)... *He turns over to John, who speaks Russian and tells him.*

John: Oh, he means like fantasy, hmm, like a science fiction museum.

Researcher: That's fantastic. Have any of you been to such a museum?

Olga: I have been to a movies museum. It was great!

John: It is not really the same but you can see science fiction in this sort of museums.

Through “experiencing the known,” the teacher provided “access without children having to leave behind different subjectivities” (New London Group, 2000, p. 18). Even for Sergey and Olga, who were having difficulty expressing themselves, identified as belonging to the low-ability group of assisted learners, this activity enabled them to show aspects of their personal stories and seemed relaxed. Sharing their ideas within the group, allowed to benefit from John’s abilities and knowledge as autonomous learner. The experiential knowledge acted as scaffolding⁴ and encouraged engagement for these students. This entanglement with learners’ identities is described by Kalantzis, Cope, et al. (2005, p. 37) as “belonging.” They argue that “a sense of belonging is crucial to effective learning as it engages the learner’s identity” (Kalantzis, Cope, et al., 2005, pp. 37, 64). Kalantzis, Cope, et al. (2005, p. 51), refer “to this engagement with learners’ identities as the learner’s knowledge, experiences, interests and motivation.”

Through the “Stick to it” activity, students found out new information; this “new” knowledge soon became “known.” Kalantzis, Cope, et al. (2005, p. 48) describe this as follows: “The place to which you travel becomes part of you, part of your repertoire of life experience, and in fact another aspect of your identity.” The use of multimodal modes of literacy such as the PowerPoint, allowed to address students’ identities and “realities of difference” (Kalantzis, Cope, et al., 2005, p. 51), such as experiences, interests and interpersonal styles. Supporting their “mental files” before reading (Keene & Zimmerman, 1997) with this sort of multimodal activity, facilitated students’ learning and acted as a stimulating repertoire of “before reading” activity. Students should be able to consciously activate relevant schemas (prior knowledge) to comprehend new information from texts (Shallert, 1982).

Conceptual Learning

During the conceptual learning process of the LMP, the students following the guidelines provided in the WebQuest employed, were assigned a scientist role (Ornithologists, Aquatic Biologists, Zoologists). They researched online for information on endangered animals and their impact on their environment based on their “scientific field.” Following this procedure, students completed a “Web of Life” print sheet, including fast facts about the chosen species. This was a *conceptualizing by naming* activity, as students explored concepts and developed specific vocabulary. The following excerpt is from this discussion between members of Group A and the principal researcher during the “Web of Life” activity.

John: I think we must start writing facts like its size, color, habits etc.

Olga: I am not sure. I think we should put it aside and first note about why the animal is endangered.

⁴Scaffolding (Bruner, 1975, 1983, 1986) is a metaphorical concept for an instructional approach which posits that teachers (as apprentices) accommodate students’ individual needs through “the systematic sequencing of prompted content, materials, tasks, and teacher and peer support to optimize learning.” (Dickson, Chard, and Simmons, 1993, p. 12).

John: Perhaps we can do both. Did you find any useful information so far? Sergey?

Sergey: I found this. Why it is called a carnivore, because it eats meat. Shall we put it?

John: Yeah, I think so, sure. And there is that point there, the diet, there, put it, see.

Sergey: Yeah ... I understand.

John: So, first add this here so that we don't forget. Then, look at this about the anatomy, it's great.

Olga: Yes, we need this with that, gill slits. And the habitat, found near shore along most of the temperate

Sergey: Okay, I will write this too then here.

Following "The Web of Life" activity, students examined the effect of disturbances throughout the whole food chain using the "Consequences/effect wheel," where they thought and jogged down as many (direct) first order and (indirect) second order consequences they could think of "Animals' extinction." The following excerpt is from this discussion between members of Group A and the principal researcher during the "Consequences/effect wheel" activity.

Olga: I am not sure about whether this is a first order consequence.

John: I am not sure either. I think it's here though.

Researcher: You can read it carefully and decide then.

Olga: Hm, see there is this article about how whaling affects the ecosystem ...

Researcher: Exactly.

Sergey: It says that whales are vital to the food chain.

John: It regulates the food flow of the ocean.

Researcher: How do they do that?

Olga: I can't find it.

John: Here, I know, "they consume a whopping 40 million krill".

Olga: Wow! So is this a first or second order consequence? I think it is

John: It is a first, right?

Sergey: Yes, I think so too.

Olga: Okay, let's add it then.

The above sequential activity covering two sessions involving both conceptualizing by naming and conceptualizing by theory, supported students to structure their thinking and research strategically, through developing their viewpoints and individual meaning making. The collaborative learning structures ensured that all students were able to have input, ensuring that they were actively involved in the discussion and this was a way to open up learning to diversity. 'Weaving' (Luke et al., 2003) between back and forth in terms of experiencing the known and conceptualizing helped students reach the learning goals. Drawing on students' prior knowledge first, and building on it to deepen students' conceptualizations, is a meaningful way to address diversity (Savva, 2016b). In particular, "overt instruction" in multiliteracies pedagogy, goes beyond assimilation and teacher-centered transmission (Mills, 2006). The students were thus able to have access first, and

participate secondly, in the activities, regardless of their knowledge level, using their own meaning making resources.

Analytical Learning

In the analytical knowledge processes, students in Group A explored a range of texts from the museum visit, including labels, videos, pictures, media articles and essays. Students engaged in activities such as the “Juxtaposition”, where they compared and contrasted two museum texts in terms of content, structure and language features (*analyzing functionally*). Taking a stance on the use or not of labels in museums, they stood in a corner of the room during the “Four corners” activity (*analyzing critically*). The following excerpt is from this discussion between members of Group A and the principal researcher during the “Juxtaposition” activity.

Researcher: How is reading this essay different from watching the video with the text?

Olga: There is movement in the video.

Sergey: And you see more things happening.

Researcher: Yes!

John: You get more information from a video.

Sergey: People talk and you hear sounds.

Olga: Yeah ... It is more interesting. John: You also understand the meaning easier because you see and hear and all, the tone is different. So I think this is why they chose to use this at the museum.

Analyzing functionally through juxtaposing primary and secondary sources, novel and film versions enabled this group of students to focus on the language and visual features of these texts. The significance of this process, lays in preparing students for creating their own texts in “Applying.” Concurrently, *analyzing functionally* also enabled the students to understand how the curators of the exhibition decided to use each text and position visitors in particular ways in *analyzing critically*, gradually involving them in a variety of cultural knowledge and perspectives. This was evident in the “Four Corners” activity. Each group decided on whether to go for “agree,” “strongly agree,” “disagree,” “strongly disagree.” Each corner’s group discussed the statement and developed a collective response to be shared and debated. The excerpt that follows is from Group A’s discussion while trying to prepare their argument.

John: So, we are claiming labels are important in museums ...

Researcher: Why is that?

Olga: There are labels in other places and are important there. Like a bus stop.

Researcher: Okay right, that’s called a sign but it is similar.

John: There are people who don’t know what an object is about. And the museum has to teach them.

Olga: You explain things with writing.

Sergey: And it is sometimes interesting to know about an object's story.

John: Yeah, when something happened and what era does it belong.

Olga: So labels are important in a museum.

Students, as shown above, asked questions about whose interests are served in using labels in a museum and how they can be of use. In this sense, they were empowered to critique the approach of some curators to leave out labeling from exhibitions. Students indicated signs of agency, not only as critical readers in and beyond school, but also in developing their own texts, which could suggest they acted as learner transformers (Comber & Kamler, 2005; Gee, 2000). Importantly, the critical framing stage which adheres to "analyzing," according to Cloonan (2007, p. 4), leads to students detachment from what they have learned, and develop critique of the learning already gained, through situated practice (experiential) and overt instruction (conceptual). In this way, the analysis builds on the experiential and the conceptual. Students in Group A, were able to progress from superficial knowledge, to deeper understanding, by denaturalizing and assessing learning "in relation to the historical, social, cultural, political, ideological, and value-centred relations of particular systems of knowledge and social practice" (New London Group, 2000, p. 34). For example, John was able to see how some people would appreciate information in labels since they might not have sufficient knowledge about an object. He also appreciated that other children of his age from other cultures might also like to read the labels in a museum like himself.

Applied Learning

The final transformative stage within the LMP process involved "applied" learning. Students moved to a level of being able to create and become knowledge producers. This was achieved using a range of modes and media, which in turn catered for a variety of "learning styles" or multiple intelligences (Gardner, 1999), including the visual, auditory, linguistic, spatial, and gestural (Kalantzis & Cope, 2005, p. 239). In particular the "Curator for a day" activity, during the museum educational visit, and the presentation of their work for the Living Museum during the "Museum Day," are evidence of Group A's collaborative work and advancement of literacy repertoires.

The following is an excerpt of the "Curator for a day" activity, while students worked individually on developing a room based on a hypothetical scenario they had previously thought of in their Groups during the museum visit taking inspiration from an exhibited work.

Sergey: I think the background is wrong.

Olga: I am not sure. We should ask the teacher.

John: I like the colours, and you have placed the objects in a nice way. It looks real

...

Sergey: Do you prefer that I add one more chair here?

John: No, it looks great as it is. Mine is not as good, it's overwhelming. I will figure it out.

Olga (*while gluing*): I love this. It's probably the best activity so far!

It was evident from the three focal students' performance in *applying appropriately*, that, despite their difference in abilities and subjectivities, the activities suggested an improved performance. Looking at Olga's collage, it was evident that she had produced a high quality work, based on the background, the colors, and arrangement of objects. She also understood the layout and the genre. She was interested in design and fashion, which was what she was passionate about. She was detailed in every aspect of placing the objects and resulted in a realistic scene. John, on the other hand, was not as detail prone, and his creation was somewhat confusing due to the choice of colors and background. It was clear that he was keen to incorporate different elements in his collage, yet he found it challenging to create the final piece of work. Finally, Sergey's collage was simple, yet with a good balance as far as the background, the colors, and arrangement of objects.

During the process of constructing their room, John encouraged Sergey, by stating how well he was doing, and being overall more apt to lead the group, coordinating the other two to achieve the planned objectives. Sergey was timid, yet prompted by his classmates, he was able to complete the task as an autonomous and active learner. What was profound in this activity, is how Olga showed a much more positive attitude towards the lesson, unlike her usual self during the first couple of weeks of the LMP when she seemed disinterested to participate. This was attributed to her feeling more competence, and having increased self-esteem due to her personal interest in the task.

The final piece of the puzzle of the intervention, included the presentation of each group's work during the "Museum Day." Group A presented their work by having John introduce the museum wing for aquatic biologists, and discussing how his group went about to think of what content to include in their museum and how to present it and why in terms of print and multimodal ways of communication. Olga presented more specific information about how the three set up the fast facts page and interview with an aquatic biologist.

What was evident from this group's PowerPoint presentation and digital multiliteracy practices observed overall during the LMP, is that the use of the knowledge processes benefited students in terms of agency—simply put this means giving students voice through guided activities. Scaffolding students' agency through the knowledge processes, resulted in higher levels of autonomy, indicated improved levels of ownership of their learning and suggested empowered subjectivities, as confirmed by students' and teachers' reflective interviews. It is crucial that this type of student agency is embedded in teaching and learning. Importantly, what the final presentation pointed out is, that these students were able to gain a deeper understanding on how and when to apply the strategies attained in different contexts, rather than reducing them to "school activities" or "timefillers" (Anstey & Bull, 2004, p. 160).

Conclusions

The main characteristics of the museum–school partnership of the research acting as an emergent multiliteracy practice are seen below (Fig. 12.3). In some cases, the collaborative activities suggested the LMP and in particular digitally mediated activities through the WebQuest achieved the impact of promoting a positive learning environment where the average and weak students gained self-esteem. This in turn facilitated students’ engagement with different activities in particular in multi-modal tasks. Kellough and Kellough (2008) make the point that teachers should use effective teaching approaches which can lead to a positive classroom environment. It was evident that the various activities in the LMP paved the way for students to research ideas, act creatively, and perform better using the five aspects of multiliteracies through the computer as a medium and to later present their work.

Different aspects of the LMP contributed to students’ collaborative and group work; problem solving and thinking; analyzing and research skills; print and multi-modal literacy; speaking and listening; and critical thinking and reflective practice. Another important aspect of the instructional framework that contributed to expanding students’ repertoires was engagement with multimodal texts across all stages of the LMP. Students were motivated by the use of digital texts yet more importantly the different modalities catered for their variant learning styles and low linguistic performance. Baker (2010, p. 67) states that “meaning expressed in one mode cannot be directly and completely translated into another.” The use of verbal modes



Fig. 12.3 Elements of a museum–school partnership as an emergent multiliteracy practice

(reading, writing, listening, and speaking) as well as nonverbal modes (visual, embodied, audio, gestural, tactile, and spatial) are an integral part of multiliteracies pedagogy and in particular museum with its unique nature has a lot to contribute towards addressing multimodalities.

What remains to be seen is the extent to which these approaches which positively influenced student learning and affective outcomes can be adopted in the long run in a more systematic way in schools and be sustainable and feasible within routine classroom practice. It is proposed that a longitudinal view of the museum–school partnership to be sustainable is necessary and for students' learning outcomes to continue to improve. Nevertheless, students' improved engagement with the multiliteracy activities and positive attitudes are a good sign of possible success in the future of implementing the Museum Multiliteracies Practice as a framework for undertaking successful museum–school partnerships. The requirements, of course, are for the partnership to comply with the principles and characteristics described earlier as prerequisite to maintain the innovation.

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