

Museums as Learning Spaces: A Case Study of Enhancing ESP Students' Language Skills in Kuwait University

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Abstract

A number of studies have looked at the use of videos, audios, worksheets, and games as tools in language teaching/learning. Some studies have recommended art galleries as a space for language learning. This study investigated the use of museums for English for Specific Purposes (ESP) language learning. The study focused on engineering students studying in their third year at Kuwait University. The study aimed to provide an approach aimed at helping ESP instructors to teach materials to students in a fun, creative way. The study employed 11 engineering male students in a fieldtrip to one of the two science museums in Kuwait. Students were asked to write a narrative journal about their experience at the museum. The results showed that students' narratives were written creatively, following the narrative structure block. The results also showed that it may be useful to introduce this type of learning to ESP courses because the museum has a great deal of information to exhibit, unlike traditional ESP books, which present limited scientific information. The study suggests that ESP (and ESL) courses should implement museum visits because such excursions have a significant impact on students' language learning.

Keywords: museums, language skills, English for specific purposes, ESP

1. Introduction

1.1 Significance of the Study

Studies have confirmed the significance of field trips in terms of cognitive, motivational, affective, visual, social, and communication skills. These studies have shown that museum visits, regardless of whether it is an art, history, or science museum, help students develop their communication skills and knowledge. However, few studies have looked at Arab ESL/ESP students and museum visits. Therefore, this study explores students' perceptions of a science museum visit in Kuwait and how a museum visit can help students enhance their language learning experience.

I have chosen this topic because of my passion for museums. During my graduate studies in London, I dedicated my free time to visiting museums around the city. I became aware of school visits to different museums and hoped to study this type of field trip in relation to my research field. I argue that ESL/ESP learners need a structure that creates a meaningful learning experience at the museum. While online visits are more cost effective and even more advanced, online visits are not available in Kuwait. I believe that virtual museums should 'complement' rather than 'substitute' the real museum. The virtual nature of the Internet is problematic when it exhibits a museum artifact. In other words, virtual spaces do not allow visitors to navigate through the reality of the real museum (Javier, 2019).

1.2 Literature Review

Much of the extensive body of literature on museum learning has been conducted in science museums (McManus, 1987; McManus, 1989; Serrell, 1990b; Raymond 1993; Heltne & Marquardt, 1988). Learning in the context of a museum differs from conventional classroom learning. When students go to a museum to learn, they learn not only about the objects exhibited in the museum, but also about the landmarks offered to the public. Learning in a museum is a fun, spontaneous individual process wherein visitors can roam around and browse rather than being guided by an instructor. Lewis (1980) favours the museum as an educational institution because museums are considered to be an informal setting, arguing that the absence of control facilitates the learning

process. The teacher/student relationship is characterised by the power and authority structure in the classroom. In museums, however, both teachers and students are receiving the same knowledge from a third party.

Hooper-Greenhill (1988a) investigated the role of museums in education. In the innovative *Museum and Gallery Education*, Hooper-Greenhill investigates the Victorian age, when the first public museum opened in Paris. The Louvre museum opened in 1792 with an educational mission. Its education role was achieved by using various themes and labels to display information about the works displayed in the museum. Museums have now become a place where people can learn, network, enjoy historical antiques, and browse vintage catalogues.

A mixed-method study (qualitative and quantitative evaluation) by Ruanglertbutr (2016) found that museum visits are beneficial for ESL learners. The study was conducted at the Ian Potter Museum of Art and investigated 240 students studying English courses in Melbourne. The use of the artistic objects and artefacts had a significant impact on students' linguistic and museum literacy skills. Consequently, teachers are urged to re-design and structure a new curriculum that links museum visits "with reference to literature that acknowledges the similarities between the visual and verbal arts and its potential for developing English language macro skills" (Ruanglertbutr, 2016, p. 3).

Museums aim to provide enjoyable, accessible opportunities for all social classes in order to unify all members of society. Museums have become neutral spaces and key institutions for their communities (Buffington, 2007, p. 13). Buffington (2007) uses the Museum of Fine Arts in Boston as an example. The museum is free of charge on Sundays and was established in 1877. This museum is intended to be affordable to the working class, offering them the accessibility to enjoy museums in their free time (Buffington, 2007).

Students' textbooks are key components of the learning process. Litz (2005) argues that, without textbooks, no English class could function because textbooks play a significant role in meeting the learning objectives, complementing the learning environment, teaching methodology, teacher, and learner coherence (Parsaei, Alemokhtar, & Rahimi, 2017). However, the dependence on traditional book learning limits students' knowledge.

Ingam (2013) states "museums also are strategic in implementing STEM education initiatives". Therefore, science and engineering students will gain complementary knowledge about new inventions and technologies in general from museums, whereas classroom education focuses on specific criteria neglecting other learning skills. Museums are considered ideal spaces to assert "new patterns of negotiation between cultures, languages and traditions" which will lead to "an understanding that culture is composed of seriously contested codes and representations, meaning systems, traditions, and cultural artefacts" (Becker et al., 1992, p. 41).

ESL learners should allow these institutions (i.e. museums) to better understand the students' multiple identities by questioning accepted narratives about museums. ESL educators should recognise that "culture is learned . . . [and] provides a range of permissible behaviour patterns, . . . people are not usually aware of their culture, . . . culture is expressed verbally and non-verbally, and culture affects peoples' attitudes towards schooling and it governs the way they learn" (Cruz & Thornton, 2013, p. 34).

In *Scaffolding Language, Scaffolding Learning: Teaching Second Language Learners in the Mainstream Classroom*, Gibbons (2002) calls for integrated content teaching. Gibbons recommends that teachers "integrate 'language' and 'content', so that a second language is developed hand-in-hand with new curriculum content" (p. 6). For ESP learners, specifically in engineering, this integration can only be achieved by exposing learners to tangible materials that will help them develop their knowledge of science and engineering.

Educators alone cannot take responsibility for museum education. The spirit of museum education has to "imbue everyone who works in museums... the policy of any museum should be an education policy... education is a key component in every museum" (Pittman, 1991: 43, cited in Hooper-Greenhill, 1994: 8)

Science and engineering education should be components of museum education. Pedagogy should be involved in the development of museum exhibitions and other core activities (Hooper-Greenhill, 1994). According to Hooper-Greenhill (1994), it is the responsibility of educators to advocate for learners and to consider learners' needs and potential interests; educators must provide appropriate material to develop learners' knowledge and understanding according to specific learner target groups, e.g., by providing science museums for STEM learners and history and art museums for humanities students.

Educators who use museum education in the UK must serve as museum guides and as marketing professionals for the museum public. Globally, museums are currently undergoing an "upheaval in education", and there is an obvious "expanded role for museum education" (Hooper-Greenhill, 2013, p. 8).

This paper investigates whether museum visits develop students' communication skills. STEM education, as I

discuss, is interwoven with cultural mediation when engineering students who learn ESP go on a field trip to the science museum voluntarily. This research aims to address and validate the current inadequate education system, in which textbooks dictate learners with grammar, specific types of writing, and reading comprehension. Alim (2011) and Norton and Toohey (2004) warn educators against following this system as they limit the space for open reading, which leads learners to not invest in themselves.

Affective investment refers to *what* students learn, *how* they learn it, and *why* they learn it (Ibrahim, 2006). If educators are unable to address these concepts, we not only fail as educators, but also fail as generation builders for those who depend on us. Within the ESL context, Shier (1990) argues that the ability to “express personal thoughts and feelings” is significant to *why* we pedagogically and affectively invest into *what* we learn and *how* we learn it (p. 301).

2. Methodology

2.1 Data, Procedures, and Participant Observation

The advanced ESP course in engineering degrees requires students to develop their written and oral skills. Based on five years of teaching ESP, I argue that the existing curriculum limits students’ critical thinking and restricts them from including anything out of the course books. In other words, engineering students are limited (and forced) to use topics found in the course books in both (English 1 and English 2). I believe that students would be able to be creative, particularly engineering students, if they were exposed to the wider knowledge of technology and science.

In order to validate museum visits and enhance students’ learning skills, I asked students whether they would be interested in going on a trip to the science museum. Following the trip, students were asked to write a narrative essay describing their experience. The study included 11 students (of the 25 in the class) who were willing to take part knowing that it would not affect their grade. The study included only male students because female students would require a male permission: something that I did not want to be responsible for. Taking only male students was easier for me, particularly when arranging the timing and the duration of the visits as they were flexible. Students were asked to sign a consent form and read the information sheet about the research (see appendix 1).

As I was enthusiastic about being part of this field trip with my students, I hoped to find a student discount on ticket prices. However, the museum did not have special rates for students, and all visitors had to pay exactly the same amount (3 KD/10 USD).

As the museum was not busy on the day of the visit, the staff was able to discuss their experiences and share their knowledge with my students. However, most of the Kuwaiti guides did not speak English, which was a barrier with my engineering students who were conformable speaking English, particularly in terms of scientific jargon. The purpose of the trip was not only educational, but also a powerful museum experience that would create an authentic feeling of belonging and give them the desire to come back to the museum.

When students encounter the museum as a group, they are offered an accessible space to collaborate and share ideas as learning is reinforced “through scaffolding previous educational and personal experiences” (Gottlieb, 2006, p. 112)

While Armitage (2017, p. 28) states that there is “less emphasis upon academic reading in the museum experience”, the findings of this study suggest otherwise. The students examined the signs, reading aloud and observing the materials exhibited. I observed that the students were comfortable reading English signs, and only a few of them checked the Arabic translation when not sure on the meaning. When students read the signs, they worked on that in a team. In other words, three to four students read the signs together in groups, which Gottlieb (2006) argues to be an effective learning experience. Choral reading is considered not only a valuable way to enhance reading out load, but also a safe space to practise reading without the fear of being judged by the instructor. Though the pronunciation was often incorrect, they were joking and laughing about it rather than being embarrassed. This finding contradicts what Gutierrez & Rasmussen (2014, p. 153) state as they warn educators that “anxiety or stress can be very high for the learners” in the museum because it is a new learning environment for them. Gottlieb (2006) also highlights importance of choral reading as it helps ESP learners share scientific ideas, ask questions, and discuss important information about scientific and engineering inventions related to their field of study.

2.2 Context of the Study

The Sheikh Abdullah Al Salem Cultural Centre (SAACC) is considered one of the world’s largest cultural museums consisting of 22 galleries with over 1,100 exhibits. There are five main buildings in the centre, namely

the Natural History Museum, Science and Technology Museum, a Fine Arts Centre, the Arabic Islamic Science Museum, and the Space Museum. The centre also has a main theatre where special events are held and was opened to the public in March 2018. As the SAACC states, the museum is a place where people can have fun and learn new things in different areas. Although the general purpose of the museum is educating people, their internal structure should accommodate educational staff on top management levels.

With no support system in the English Language Unit where I have been teaching from 2008-2013 and 2018, I have little opportunity to create new, creative, relevant, and engaging material for engineering students. Therefore, I have asked students to voluntarily join this study to ensure that their engineering and science experience is based on creative critical thinking that museum provides for all visitors (whether scientific, historical, or related arts). I explore the ways in which the SAACC science, space, and technology galleries are relevant to the engineering students that I teach in Kuwait University.

Cruz and Thornton (2013) state that teachers and educators should take advantage of museum culture. Taking advantage of this culture means incorporating diverse learning styles that contain written and visual materials and visuals. This linking will bridge the gap between the educational institution and home life. It must be noted that museum visits are entirely cultural. In the Gulf, and in Kuwait specifically, these spaces are not considered learning spaces. Educators should emphasise that culture is interwoven in learning. Therefore, the main goal of this study is to introduce Kuwait University students to the museum and museum-going skills and behaviour. This initial experience of a science museum visit will hopefully provide the students with the experience necessary to gain confidence as museum-goers and be comfortable in the museum environment. Another goal of this study was to reinforce their scientific and engineering knowledge, which they will gain through visits to the museums.

3. Results and Discussion

A series of ESL exercises were conducted after the fieldtrip visit, namely an exhibition of the properties shown, a piece of writing that explained the learners' visit, and a presentation of their final project about a new invention related to the science exhibition. The purpose of these activities was "to reinforce and to extend the learning that went in the museum visit" (Shoemaker, 1998, p. 43-44).

Science museums are learning spaces that not only open up critical possibilities to explore the scientific content, but also allow students to explore the intersection between language, identity, and culture within ESL education. I believe that museums are powerful tools in language learning as they also construct the bilingual identities of the students.

Few studies have fully addressed the museum as an educational institution, of which many have looked at art museums and how to teach culture through art. To my knowledge, this paper is the first to address the issue of scientific museum and ESL learning in the Kuwaiti context. This study also suggests that, the role of language learning should be enforced by strengthening intercultural understanding, and emphasis should be put on the process of learning rather than teaching.

Engineering students in the past have reported a lack of connection between what they study and the goals for which they would use that language in their future careers. Because the intermediate ESP course is entirely grammar oriented, students struggle to find the potential relevance of learning grammar of a foreign language and its application to scientific contexts. However, students find the advanced ESP course more enjoyable, though it is still limited to reading and writing skills. It is necessary for ESL instructors to expose students to the culture of the language that they are studying and experience of using the language in a real communication context (Fisher, 2001; Evans & Fisher, 2009).

Fisher (2018) carried out in a five-year project involving language students 13-14 years old who visited The Fitzwilliam Museum in Cambridge, UK. Fisher found that "whether related or not to this lack of understanding of potential relevance, [students] also report lacking confidence in the subject, and this seemed unrelated to how well they were doing in their exams". On the museum site, students have the chance to practice language outside of classroom, which, according to Fisher *boosts their confidence*. The project aimed to expose learners not only to using and understanding the language, but also to having the knowledge of the wider world, particularly the art and history of the target language country. This study targeted engineering students and allowed them to have more comprehensive knowledge about new technologies.

In the post-museum narratives, students reported that they had gained confidence in the subject matter, stating that their knowledge has been improved due to their museum visit. Enjoyment was also emphasised by many students.

Duke (2010) states “learning from an experience requires the visitor to structure inquiries for himself or herself, rather than jumping through hoops that have been pre-arranged as they are in a conventional lesson” (p. 272). Therefore, learners were introduced to variety of exercises, which were found to be useful. Using Bloom’s taxonomy, ESP learners illustrated their knowledge by recalling and understanding information that they had received in their museum visit. Students then processed and analysed this new information by evaluating it in a narrative essay, in which they expressed their stance on this experience. Finally, the students used the information to create presentations for their final projects. Those who agreed to go on the field trip scored higher than those who worked on reading the material and worked on a presentation based on the assigned readings only.

Wilson (2012) argues that the relationship between museums and the process of learning a foreign language is powerful, explaining that that they both aim to widen the cultural outlook of visitors. Wilson investigates the intersectionality between the museum and the foreign language learning and confirms that “museums do teach culture - the myriad educational talks, films, guided tours, and printed resources produced by museums for the use of their visitors attest to this fact”, adding that “museums also ‘teach’ culture by displaying, interpreting, representing, and/or omitting cultures in ideologically loaded ways”. Wilson calls for the need to examine all aspects of museum practice (whether direct instructions or curatorial stance).

Based on my observations, not only the unfamiliar objects inspired the students, but also the familiar objects motivated students as they learned how to use these objects, and/or theories about them without having touched them. The Centre for Applied Linguistics states that second language learners are perceived to have more positive qualities than those who do not learn a second language. ESL learners are considered to possess superior problem-solving skills. Second-language speakers score higher on standardised tests and achieve higher grades. The centre also states that these students are less likely to leave school, and therefore gain further career opportunities. One important goal of museums is to support foreign language learning. Therefore, museums must “reach out” to educators to cooperate in building an appropriate curriculum that suite the levels of all students and the content that they are being taught.

I employ Bloom’s Taxonomy Model (1956) to analyse and validate students’ narrative essays. The preliminary version of this model is as follows:

Knowledge → Learner’s ability to recall information;

Comprehension → Learner’s ability to understand information;

Application → Learner’s ability to use information in a new way;

Analysis → Learner’s ability to break down information into essential parts;

Synthesis → Learner’s ability to create something new from the different elements of the information;
and

Evaluation → Learner’s ability to judge or criticise information.

Anderson and Krathwohl (2000) redefine the model as follows:

Remember → recalling information;

Understand → understanding information;

Apply → using information in a new way;

Analyse → breaking down information in a new way;

Evaluate → judging or criticising information; and

Create → creating something new from different elements of information.

These categories are not a hierarchy and instead are interwoven. Furthermore, each category depends on all of the others in order for them to effectively function.

Following the field trip to the museum, which lasted for approximately five hours (including the viewing of a 3D short movie about the creation of the universe), students submitted their written narratives. I collected these narratives and processed them using the qualitative research analysis software NVIVO. The software aided me in coding the statements and words used in the narratives to categorise them within Bloom’s taxonomy model. The following shows and analyses students’ narrative pieces and outlines the frequency of their occurrence in the following table.

Remember	Understand	Apply	Analyse	Evaluate	Create
18%	17%	15%	12%	19%	19%
Total					100%

I extracted a number of excerpts from students' narratives from their assignments, which illustrate how students have learned a lot about science and engineering through their visits:

The whole trip was a fun experience that made us relax before the second mid-term and I really appreciate that. I recommend the museum to everybody, though I do think that they should conduct maintenance more often (Excerpt 1);

The museum had many things relevant to my study, especially in the fluids section, which made me really appreciate what I saw (Excerpt 2);

We had an amazing visit this week and saw and learned new things about mother nature. We saw science and inventions, the jungle, aquarium, and space (Excerpt 3);

One thing that captured my attention is the history of steam engines and how they worked (Excerpt 4);

We saw some incredible inventions that I've never thought about before (Excerpt 5);

When we visited the nature exhibition, it felt like we were in nature. The humidity, sounds, and everything else made me feel like Indiana Jones (Excerpt 6);

I learned new information: I'm now aware that black holes can die. After we watched the documentary, I learned about Hawking radiation and how black holes can come to an end (Excerpt 7);

The university should carry out more of these informative trips. I know that I and my classmates enjoyed this, it was interesting to learn more about the universe. The museum trip was worth the time spent there (Excerpt 8);

I wished that the trip was at the beginning of the year because I would have learned a lot and had more time to work on the final presentation incorporating what I had seen in the museum (Excerpt 9);

We learned about the history of ships and cars, and I was fascinated by how relatively sophisticated early boats were. I also learned that the first car was steam powered, which was surprising. We did not learn this basic information at high school or even university (Excerpt 10);

The most exciting object I saw was the Hubble telescope, which I'm a big fan of. I've seen pictures of telescope but seeing it in person made my day (Excerpt 11).

The students' perceptions of the museum were all positive. All participants agreed that the trip to the museum was enjoyable and worthwhile. Since the engineering college in Kuwait is considered largely based on theoretical research, students fond of field trips relevant to their study Student's evaluations were also taken into consideration. One student suggested that the trip would have been more effective earlier in their studies because it would allow them more time to think and be creative in their final project. A second visit may also have been useful in reinforcing what was learnt on this first trip.

4. Conclusion

It is essential for museums to contribute to communities in a relevant and meaningful way. It is important that the SAACC implement a guide with the languages spoken in Kuwait. Although most visitors to the museum are expats who speak English, other languages such as Hindi and Pilipino (Tagalog) should be added as their speakers account for a large number of expats in Kuwait.

What are museums doing now to change how they represent members of the community with limited English and Arabic language proficiency? Museums are urged to provide equal learning opportunities to those who come from different linguistic communities. If these communities are not catered to, the museum will only be accessible to Arabic and English speakers. Museums should include other language speakers so that when learners "come into the museum, they encounter not only English, but also multiple modes of expressing English, including new contextual vocabulary and sentence structures of academic language and terms specific to museums and the visual arts" (Gutierrez & Rasmussen, 2014, p. 147).

"Traditional teaching and learning privilege alphanumeric print and mono-literate practices" (Rhoades et al., 2015, p. 308). Traditional teaching and learning perceive multimodal literacy (learning across multiple media, modes, and con/texts) as less valuable (Rhoades et al., 2015, p. 309). I argue that this perception is a result of teachers and teaching institutions resisting new ideas proposed by young academics recently joining the field. As

ESL/ESP teachers have been teaching (and using traditional books) for over 15 years with no changes to the curriculum, it is common for them to resist change and/or oppose new ways of teaching. Tasks and practices on the ESP curriculum taught at Kuwait University should not only be add-ons, but also incorporate new vocabulary needed by ESP learners and scientific content. Cruz and Thornton (2013) state that, for learners to flourish in their educational journey, it is “often necessary that teachers tread outside of their comfort circles” (p. 35).

References

- Alim, S. (2011). Global ill-literacies: Hip-Hop cultures, youth identities, and the politics of literacy. *Review of Research in Education*, 35(11), 120-146. <https://doi.org/10.3102/0091732X10383208>
- Anderson, L., & Krathwohl, A. (2000). Taxonomy of Teaching and Learning: A Revision of Bloom's Taxonomy of Educational Objectives. *Educational Psychology*, 479-480.
- Armitage, M. (2017). *Planning for Inclusion in Museum Education Practice: Preparing Docents and Museum Educators for English Language Learners*. Thesis. The Ohio State University.
- Becker, C. et al. (1992). *Different Voices: A Social, Cultural, and Historic Framework for Change in the American Art Museum*. New York: AAMD.
- Bloom, B. (1956). *Taxonomy of Educational Objectives*. Handbook I. Cognitive Domain. David McKay, New York.
- Buffington, M. (2007). Six themes in the history of art museum education. In P. Villeneuve (Ed.), *From Periphery to center: Art museum education in the 21st century* (pp. 12-18). Reston, VA: National Art Education Association.
- Cruz, B. C., & Thornton, S. J. (2013). *Teaching Social Studies to English Language Learners*. New York: Routledge. <https://doi.org/10.4324/9780203094167>
- Dierking, L. D., Falk, J. H., Rennie, L., Anderson, D., & Ellenbogen, K. (2003). Policy Statement of the “informal science education” ad hoc committee. *Journal of Research in Science Teaching*, 40, 108-111. <https://doi.org/10.1002/tea.10066>
- Duke, L. (2010). The museum visit: It's an experience, not a lesson. *Curator: the Museum Journal*, 53(3), 271-279. <https://doi.org/10.1111/j.2151-6952.2010.00028.x>
- Evans, M., & Fisher, L. (2009). *Language Learning at Key Stage 3*. Research Report DCSF-RR091. Cambridge: University of Cambridge.
- Fisher, L. (2001). MFL recruitment post-16: the pupils' perspective. *Language Learning Journal*, 23, 33-40. <https://doi.org/10.1080/09571730185200071>
- Fisher, L. (2018). *Learning languages outside of the classroom: a visit to the museum*. Retrieved from <https://www.meits.org/blog/post/learning-languages-outside-of-the-classroom-a-visit-to-the-museum>
- Gibbons, P. (2002). *Scaffolding Language, Scaffolding Learning: Teaching Second Language Learners in the Mainstream Classroom*. Portsmouth: Heinemann.
- Gottlieb, M. (2006). *Assessing English Language Learners: Bridges from Language Proficiency to Academic Achievement*. Thousand Oaks: Corwin Press.
- Gutierrez, S., & Rasmussen, B. (2014). Code-Switching in the art museum: Increasing access for English learners. In Joni Acuff & Laura Evans (Eds.), *Multiculturalism in Art Museums Today* (pp. 145-160). Lanham: Rowman & Littlefield.
- Heltne, P. G., & Marquardt, L. A. (Eds.). (1988). *Science Learning in the Informal Setting. Symposium Proceedings*. Chicago: The Chicago Academy of Sciences.
- Hooper-Greenhill, E. (1988). *The Museum: The Socio-historical Articulations of Knowledge and Things*. PhD Thesis, Department of the Sociology of Education, Institute of Education, London.
- Hooper-Greenhill, E. (1994). *The Educational Role of the Museum*. London: Routledge.
- Hooper-Greenhill, E. (2013). *Museums and Their Visitors*. London: Routledge. <https://doi.org/10.4324/9780203415160>
- Ibrahim, A. (2006). Becoming black: Rap and hip hop, race, gender, identity, and the politics of ESL learning. In P. Matsuda, M. Cox, J. Jordan & C. Ortmeier-Hooper (Eds.), *Second-language writing in the composition classroom: A critical sourcebook* (pp. 131-148). New York: St. Martin's.

- Ingam, A. (2013). *Science Museums as Partners in STEM Education: Providing Impactful Programs that Improve Science Engagement Testimony to the U.S. House of Representatives*. "STEM Education: Industry and Philanthropic Initiatives".
- Javier, M. et al. (2019). Navigation Comparison between a Real and a Virtual Museum: Time-dependent Differences using a Head Mounted Display. *Interacting with Computers*, 31, 208-220. <https://doi.org/10.1093/iwc/iwz018>
- Lewis, B. N. (1980). The museum as an educational facility. *Museums Journal*, 80(3), 151-155.
- Lipovsky, C., & Mahboob, A. (2007). Examining attitudes towards NESTs and NNESTs: A comparison of a thematic vs an appraisal analysis. In Christina Gitsaki (Ed.), *Language and Languages: Global and Local Tensions*. Newcastle upon Tyne: Cambridge Scholars Press.
- Litz, D. R. A. (2005). Textbook evaluation and ELT management: a South Korean case study. *Asian EFL Journal*. Retrieved from https://www.asian-efl-journal.com/Litz_thesis.pdf
- McManus, P. M. (1987). *Communication With and Between Visitors to a Science Museum*. PhD thesis. Centre for Educational Studies, King's College, London.
- McManus, P. M. (1989). Oh, yes, they do: how museum visitors read labels and interact with exhibit texts. *Curator*, 32(3), 174-189. <https://doi.org/10.1111/j.2151-6952.1989.tb00718.x>
- Norton, B., & Toohey, K. (2004). *Critical pedagogies and language learning*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9781139524834>
- Parsaei, I., Alemokhtar, M., & Rahimi, A. (2017). Learning Objectives in ESP Books Based on Bloom's Revised Taxonomy. *Beyond Words*, 5(1).
- Pittman, N. (1991). Writing a museum education policy: introductory remarks. *GEM Newsletter*, 43. Autumn, Group for Education in Museums, Nottingham.
- Raymond, C. (Ed.). (1993). *What Research Says About Learning in Science Museums*. Association of Science and Technology Centres, Washington DC.
- Rhoades, M. et al. (2005). The pen(cil) is mightier than the sword. Telling sophisticated silent stories using Shaun Tan's wordless novel *The Arrival*. *Studies in Art Education*, 56(4), 307-326. <https://doi.org/10.1080/00393541.2015.11518973>
- Ruanglertrbutr, Purnima. (2016). Utilising art museums as learning and teaching resources for adult English language learners: The strategies and benefits. *English Australia Journal*, 31(2), 3-29.
- Serrell, B. (Ed.). (1990). *What Research Says About Learning in Science Museums*. Association of Science and Technology Centres, Washington DC.
- Shier, J. H. (1990). Integrating the arts in the foreign/second language curriculum: Fusing the affective and the cognitive. *Foreign Language Annals*, 23(4), 301-314. <https://doi.org/10.1111/j.1944-9720.1990.tb00375.x>
- Shoemaker, M. K. (1998). Art is a wonderful place to be: ESL students as museum learners. *Art Education*, 51(2), 40-45. <https://doi.org/10.2307/3193741>
- Wilson, B. (2012). *Making Human Rosetta Stories: Museums and Foreign Language Learning*. Theses.

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