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Multimodal assessment of and for learning: A theory-driven design rubric

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Abstract

Given the changing nature of literacy, there is an urgent need to develop alternative ways of assessment in support of students' new literacy practices in the digital age. While emergent models of multimodal assessment are being developed in theoretical contexts, the study reported in this paper illustrates how multimodal theories can be realized in classroom practice. Seeking to address the needs of both literacy instruction and assessment, this study proposed a design rubric from the multiliteracies perspective to assess students' design of multimodal texts as a means to support assessable new literacy practices. Specifically, this research aimed to investigate how the design rubric as a formative assessment tool affects English learners' multimodal text production (in this case, presentation slides). The empirical results of this study reveal that the theory-driven design rubric was useful for enhancing the students' understanding and awareness of the multimodal nature of presentation slides and led to improvement in their multimodal text production. The findings have important implications for scaffolding students' multimodal literacy by using formative assessment as one of the instructional approaches in multiliteracies pedagogy.

Introduction

Literacy education for English learners has traditionally focused on a concept of language proficiency that encompasses linguistic knowledge and skills for comprehension and communication (eg, phonics, vocabulary, grammar, reading, writing, listening and speaking). This form of literacy instruction is based on a conventional notion of literacy that is confined to a set of decoding and encoding skills. However, changes to this are now needed because the rise of digital technologies has led to a re-conceptualization of literacy. The term multiliteracies was coined by the New London Group (2000) when developing a model to frame contemporary literacy practices. According to Jewitt (2008), "the pedagogic aim of multiliteracies is to attend to the multiple and multimodal texts and wide range of literacy practices that students are engaged with" (p. 245).

A text (be it print or nonprint) that has more than one mode of semiotic representation is broadly considered as a multimodal one (Kress & van Leeuwen, 2001). Presentation slides are one form of multimodal texts that are now widely used in educational contexts, such as lectures and students' oral presentations. Teachers and students create slides with multimedia presentation software

Practitioner Notes

What is already known about this topic

- The advent of digital technology brings about a re-conceptualization of literacy.
- Today's students must be literate in both traditional printed texts and multimodal texts that are commonly associated with digital technology and multimedia.
- New literacy practices require teachers to develop new assessment practices.

What this paper adds

- This paper offers valuable insights into literacy instruction and assessment.
- This paper presents a course design using action research that responds to the urgent need to develop alternative ways of assessment in support of students' new literacy practices in the digital age.
- This paper proposes a theory-driven design rubric from the multiliteracies perspective to assess learners' multimodal text production.

Implications for practice and/or policy

- Multimodal assessment allows teachers to help students build a metalanguage for understanding and describing multimodal texts.
- Literacy and language educators may consider adapting the proposed design rubric as a formative assessment tool to provide students with constructive feedback pertaining to the multimodality of texts.
- The proposed design rubric can also be used for peer review and self-assessment.

(eg, Microsoft PowerPoint) that have built-in multimedia design capabilities. However, creating presentation slides or other multimodal texts requires the authors to think visually and often multimodally. For instance, when students are creating presentation slides, they are engaged in an active design process in which they have to make choices as to what available meaning-making modes (eg, font, color, graphics and animations) to utilize. In other words, learners have to think and act like a designer when producing multimodal texts.

Sheppard (2009) emphasized that students' design decisions "have rhetorical consequences for how a multimedia text will be received and used by its intended audience, so students have to learn to be consciously aware of the rhetorical implications of their choices" (p. 129). However, these skills are often not explicitly or actively taught in schools, and they are also often not adequately assessed. Taking presentation assignments as an example, when assessing students' oral presentations with slides as the visual aids, most language teachers assess the students based on their presentation skills with a particular focus on oral fluency and accuracy of language use. In contrast, little attention is paid to the design of slides, and even if these are included as part of the assignment grading criteria, the emphasis is often placed on their linguistic content, neglecting other nonlinguistic modes of meaning.

Cope, Kalantzis, McCarthey, Vojak and Kline (2011) emphasized the changing nature of new literacy practices and confirmed the need to develop assessments in response to the multimodality of contemporary literacy. As they pointed out, "What we do in schools under the rubric of literacy, and particularly what we measure in our literacy assessments, has not caught up with these profound changes" (p. 84). Admittedly, teaching with multimodal texts would add increased complexity and difficulty to the tasks of instruction and evaluation. It is thus vital for language teachers to develop not only adequate instructional strategies for contemporary literacy

demands, but also appropriate assessments that can more accurately reflect and measure students' literacy performance in relation to the multimodal nature of contemporary texts.

Seeking to address the needs of both literacy instruction and assessment, this study proposed a design rubric from the multiliteracies perspective to assess students' design of multimodal texts as a means to support assessable new literacy practices. Specifically, this research aimed to investigate how the utility of the design rubric affects English learners' multimodal text production (in this case, presentation slides). The design rubric was thus developed as a formative assessment tool that assumes a constructive role in student learning, providing students not just with evaluative feedback *of* their learning performance, but also constructive feedback *for* improving their learning and performance.

Theoretical frame: a theory-driven design rubric for assessing multimodal texts

The theory-driven rubric developed in the present study was guided by the five design modes (linguistic, visual, gestural, auditory and spatial) established in the New London Group's (2000) pedagogy of multiliteracies. This rubric was revised after a pilot study that examined student-created multimodal texts (see Chiu & Hung, 2011).

The proposed design rubric in this paper considers five sets of evaluation questions based on the established design elements (see Table 1) and uses a radar chart with a 5-point Likert scale, where

Table 1: The theory-driven design rubric developed in the study

Design elements	*Evaluation questions*
Linguistic design	• Was the linguistic content comprehensible without major grammatical errors? • Was the linguistic content structured in a logical and organized manner? • How did the linguistic design represented in the multimodal text enable or limit the author's communication of meaning?
Visual design	• Did the author adopt a visual theme? • Did the author carefully design the use of color and typology to reflect the selected visual theme? • If chosen to use, did the author make meaningful use of available visual elements, such as graphics, to construct meaning in a cohesive manner? • How did the visual design represented in the multimodal text enable or limit the author's communication of meaning?
Gestural design	• Did the author make use of any animated elements or special effects to design dynamic sequencing of the content? • If chosen to use, was the animation used purposefully and meaningfully to complement or supplement the other design modes for meaning construction in a cohesive manner? • How did the gestural design represented in the multimodal text enable or limit the author's communication of meaning?
Auditory design	• Did the author make use of any auditory elements, such as music, sound effect or narration? • If chosen to use, were the auditory elements used purposefully and meaningfully to complement or supplement the other design modes for meaning construction in a cohesive manner? • How did the auditory design represented in the multimodal text enable or limit the author's communication of meaning?
Spatial design	• Did the author adopt a specific layout to structure design elements? • If chosen to use, did the author make use of text alignment and margins as design elements to complement or supplement the other design modes for meaning construction in a cohesive manner? • How did the spatial design represented in the multimodal text enable or limit the author's communication of meaning?

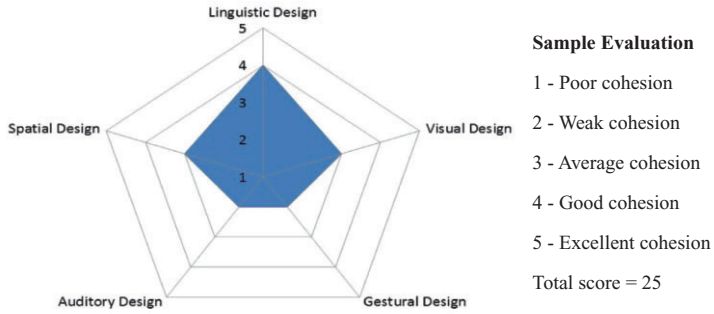

Figure 1: The five dimensions of the design rubric illustrated in a radar chart

5 indicates excellent cohesion and 1 indicates poor cohesion, to give the assessment in a holistic diagram (see Figure 1). In light of recent work on multimodal analysis (eg, Levy & Kimber, 2009; Wyatt-Smith & Kimber, 2009), the present study adopted cohesion as the core criterion in order to develop a practical assessment approach that focuses on the five dimensions or design modes of multimodal texts. The operational definition of cohesion in this study refers to "the way in which the various elements of the text are drawn together to achieve unity. . . . The degree of success or effectiveness in achieving cohesion is linked to the user's cognitive ability, technological facility and aesthetic sense." (Levy & Kimber, 2009, p. 493).

The design rubric developed in this study can be applied to various forms of multimodal texts (eg, web pages, picture books, electronic portfolios) and combined with additional context-specific, content-based criteria. Literacy researchers and educators can thus adapt the design rubric to better suit their individual research and instructional purposes. In the following sections, this paper presents a practical application of the theory-driven design rubric in action research that is drawn from a larger, design-based research project on English language learners' development of multimodal literacy. While the study reported in this paper is situated in the field of English language teaching, the instructional and assessment practices have potential for wider application.

The study

Classroom context and participants

The research site was a skill-based course offered to junior English majors at a public university in Taiwan, where English is learned as a foreign language. The course objectives were to develop students' understanding of effective presentation principles and to improve their communicative strategies for delivering English presentations in classroom settings.

Thirty-five students enrolled in the Communication and Presentation course, and the participants for the action research were a homogeneous focus group of 18 volunteers drawn from this class and randomly assigned to an exploratory group or a control group. These participants were ethically recruited based on their language proficiency, computer literacy and prior experience with classroom presentations through an initial interview. The exploratory group and the control group each consisted of nine students. All the 18 focal students were intermediate-level English learners and considered themselves intermediate-level computer users. These participants all had prior experience giving individual English presentations that involved using Microsoft PowerPoint to create slides.

To meet concerns over research ethics, the whole class was fully informed that the additional, instructional treatments and multimodal assessments given to the participating students did not

count as part of the course grade. All students enrolled in the course were assessed equally based on a rather conventional set of criteria with a focus on communicative competence (ie, how effectively the students delivered oral presentations in the target language). This paper focuses on the examination of the participating students' multimodal literacy with regard to the design of presentation slides (ie, how effectively the students made informed design decisions to create cohesive ties within and across boundaries of design modes).

Course design and procedure

The study consisted of pre-training, training and posttraining phases (see Table 2). The participants were required to give three individual oral presentations on topics of their choice in the three different phases. The presentations were 8 to 10 minutes long, with no limit regarding the number of slides. For the purpose of this research, only the 18 participating students (rather than the 35 enrolled students) were asked to give a final presentation out of class, due to time constraints.

The students gave the first presentation out of class during the first 2 weeks of the course before they received any presentation training. The first presentation served as a rehearsal practice for the students and the baseline assessment of the study. The instructor then carried out a 15-minute semi-structured interview with the presenter individually to understand the student's prior experience with English presentations in classroom settings. These interviews allowed the instructor to select a cohort of students for this action research on the basis of their similar learning experience and performance.

The second presentation was the language performance given in class after the students received course instruction and training with regard to content, visual aids and the physical delivery of presentations. After the students' formal presentation in class, the instructor held individual feedback sessions in the students' native language, Chinese, in a series of scheduled appointments. Each feedback session lasted approximately 15 minutes. The exploratory group received a formative assessment in the form of oral feedback and evaluation sheets based on the design rubric developed in the study, while the control group received only general oral feedback pertaining to their oral presentations.

It should be noted that the implementation of the theory-driven design rubric in combination of the radar chart illustration during the feedback sessions was the major instructional intervention of the present study. The intervention of the rubric-based formative feedback was conducted to scaffold the students' multimodal literacy and to enhance their understanding of multimodal text production.

The third and also final presentation could be viewed as a summative assessment to determine the students' development of multimodal literacy throughout the course. The instructor distributed a learning perception survey after the participants completed their last presentations to determine the levels of the students' understanding and awareness of multimodal text production.

Data collection and analysis

The research data were collected during an 18-week course period. As an action study, the instructor was also the principal investigator of the research team, consisting of one researcher, three research assistants and one outside expert in the field of English language teaching. This study primarily examined two types of data, including an evaluation of the students' learning achievement and a survey of their learning perception. With regard to data triangulation, the semi-structured interview sessions in the pre-training phase and the feedback sessions in the training phase were audio recorded for analysis and served as secondary data of the study.

The students' learning achievement evaluations in the pre-training, training and posttraining phases were used to assess their overall development and differences in multimodal text

Table 2: The course schedule and data sources

	Week																	
	Pre-training		*Training phase*														*Posttraining*	
Group	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*
Exp. group	First or rehearsal presentation + interview		Second or formal in-class presentation + feedback session (with the use of design rubric)														Third or final presentation + survey	
Ctrl. group	1st or rehearsal presentation + interview		2nd or formal in-class presentation + feedback session (without the use of design rubric)														3rd or final presentation + survey	

Ctrl, control; Exp., exploratory.

production throughout the course. Three sets of the students' learning achievement evaluations based on their three presentations during the course were completed by the research team: baseline, formative and summative evaluations. All the students were instructed to upload their PowerPoint slides to a course management system that was only accessible to the research team before each of their scheduled presentations. These student-generated presentation slides were then downloaded and assessed based on the design rubric developed in the present study. A 5-point Likert scale ranging from 5 to 1 (5 = *excellent cohesion*; 4 = *good cohesion*; 3 = *average cohesion*; 2 = *weak cohesion*; 1 = *poor cohesion*) was used to assess each of the five design modes mentioned earlier, with a total score of 25 in each evaluation of student presentation. In the evaluation process, each set of student-generated slides was first assessed by individual team members. If there were any major discrepancies, the research team then held meetings to reach a consensus.

In addition, the learning perception survey distributed in the posttraining phase of the course provided descriptive statistics to show the differences between the exploratory and control groups. For the eight-item survey, a 5-point Likert scale was used, with 5 representing a strong agreement and 1 representing a strong disagreement. Collectively, the results of the analysis of the students' learning achievement and learning perception provided valuable insights into the proposed design rubric for assessing multimodal texts.

Findings and discussion

The effect of the feedback intervention (exploratory group vs. control group) on the students' learning development was measured in the following two ways. Table 3 shows the average ratings per group in generalized form, by comparing the two groups' performance in the three presentations. Table 4 shows the averages of the two groups' ratings extracted from the second presentation (before feedback) and the third presentation (after feedback), by comparing the two groups' performance in the specific design modes. Both groups' performance improved with regard to slide design over the three presentations, but the exploratory group was perceived as having a greater improvement. The control group made minor revisions to their slides across all design modes, and this led to a slight improvement in performance. The exploratory group, who received

Table 3: The mean scores of students' learning evaluation in the three presentations

Achievement evaluation (total rating score = 25)	*Exploratory group (n = 9)*		*Control group (n = 9)*	
	Mean	*SD*	*Mean*	*SD*
Baseline evaluation (P1)	11.1	1.7	11.2	1.5
Formative evaluation (P2)	14.9	1.3	14.2	1.2
Summative evaluation (P3)	21.1	1.1	18.1	1.4

SD, standard deviation.

Table 4: Comparison of students' learning evaluation in the specific design modes

	Linguistic mode		*Visual mode*		*Gestural mode*		*Auditory mode*		*Spatial mode*	
Achievement evaluation	*P2*	*P3*	*P2*	*P3*	*P2*	*P3*	*P2*	*P3*	*P2*	*P3*
Exploratory group (mean)	3.6	4.3	3.8	4.6	2.4	4.1	2.2	3.6	2.9	4.6
Control group (mean)	3.6	4.0	3.8	4.6	2.1	2.9	2.1	3.1	2.7	3.6

Table 5: Results of students' learning perception survey

Learning perception survey items	*Exp. group (n = 9)*		*Ctrl. group (n = 9)*	
	Mean	*SD*	*Mean*	*SD*
1. The feedback session helped me reflect more deeply on the role of visual aids in presentation.	4.7	0.5	4.6	0.5
2. The feedback session helped me better understand the multimodal nature of presentation slides.	4.4	0.5	4.2	0.4
3. The feedback session helped me better understand how to go about designing presentation slides.	4.3	0.5	4.1	0.3
4. The feedback session raised alternative perspectives on design issues that broadened my own views.	4.9	0.3	4.7	0.5
5. I integrated key design ideas that I learned from the feedback session into my revision of presentation slides.	5.0	0.0	4.1	0.3
6. Because of the feedback session, I can more easily recognize my strengths and weaknesses in presentation slide design.	4.8	0.4	4.3	0.5
7. I think that presentation slide design is a critical part of effective presentations that deserves more of my attention.	4.6	0.5	4.1	0.6
8. I can now design presentation slides more effectively in situations that were difficult for me before.	4.3	0.5	4.2	0.4

Ctrl, control; Exp., exploratory; SD, standard deviation.

rubric-based formative feedback, clearly made substantial revisions to their slides and made better progress in most areas of design elements, particularly the gestural, auditory and spatial modes that the students did not pay much attention to before the feedback session.

With respect to the students' perceptions of the effectiveness of the feedback instrument, the survey results strongly suggest that both groups felt that formative feedback was very useful (see Table 5). On the 5-point Likert scale, the mean responses to the eight survey statements were all over 4. Overall, the exploratory group had slightly higher satisfaction with the feedback instrument than the control group. Both groups of students reported increases in their understanding and awareness of multimodal text design after the feedback sessions (Items 1 to 4). Moreover, the exploratory group was perceived to transfer their learning about multimodal text design to the third and even subsequent presentations with the aid of the rubric-based formative feedback, as indicated by their higher ratings than the control group (Items 5 to 8).

In short, this study sought to investigate an alternative literacy assessment based on a theory-driven design rubric as a means to develop and assess English learners' multimodal text production. The design rubric was found to be useful in enhancing the students' understanding and awareness of the multimodal nature of presentation slides and led to improvements in their design of multimodal texts. The reported findings have important pedagogical implications for developing multimodal assessments.

Over the past few years, the distinctive nature and educational merits of multimodal texts have been widely recognized, but at the same time literacy researchers have expressed concern over the

challenges associated with teaching and assessing (eg, Cope *et al*, 2011; Matthewman, Blight & Davies, 2004; Shin & Cimasko, 2008; Vincent, 2006; Wyatt-Smith & Kimber, 2009). As Vincent (2006) stated, "Monomodal verbal facility is generally considered to be a key educational asset" (p. 52). Literacy educators are thus often faced with difficulties in assessing multimodal texts based on criteria and instruments that are fine-tuned to work with words alone, due to limited schemes of established multimodal assessment.

Early attempts at multimodal assessment (eg, Matthewman *et al*, 2004; Vincent, 2006) commonly draw on the most prominent model of multiliteracies pedagogy proposed by the New London Group (2000). Shin and Cimasko (2008) identified three groups of research in the recent literature that applied the multimodal design model within the multiliteracies framework when considering the various design modes of multimodal texts. The first group primarily examined single modes in isolation, the second group discussed the multimodal relationship of two modes in dichotomous ways and the third group attended to the interactivity of the total spectrum of available modes and attempted to approach them in a holistic manner. Arguably, the third group has considerable potential for understanding how students synthesize the modes available in multimodal text production, but Shin and Cimasko (2008) deemed that many of these studies on multimodal texts failed to "offer concrete, comprehensive heuristics for examining interactivity among available modes" (p. 382). The present study falls into the third group of the earlier mentioned classification and is significant in that it demonstrates applicable ways of assessing the multimodality and quality of multimodal texts produced by English learners.

We have proposed a multimodal assessment framework for talking about the quality and salient features of students' multimodal text production. We argue that this framework can be used for formative or summative assessment. In terms of assessment *of* learning, this framework provides a practical, holistic way to measure student performance based on the five established modes of multimodal text design. With regard to assessment *for* learning, we have shown how the framework can serve as a formative assessment tool for language teachers to provide students with constructive feedback pertaining to the multimodality of texts. As demonstrated in this study, the utility of the design rubric is best coupled with interactive feedback sessions, where the students are more likely engaged in meaningful assessment dialogues with the instructor. Although most classroom teachers would agree that one-on-one formative feedback is beneficial to student learning, time constraints often mean that they can not provide such assistance. Alternatively, this multimodal assessment framework can be used for peer review and self-assessment to help students build a metalanguage for understanding and describing multimodal texts. We suggest that classroom teachers may consider conducting similar research to design multimodal assessment for local learning contexts. They are encouraged to develop their own classroom rubrics gearing towards specific forms of multimodal texts for formative and/or summative purposes.

Given the importance of presentation as a critical indicator of communicative competence for modern-day English learners (Hincks & Edlund, 2009), this study has taken steps in the direction of examining English learners' design of presentation slides as one text form of the multimodal genre. In a similar vein, Matthewman *et al* (2004) proposed a model to raise English learners' levels of awareness and understanding about the multimodal design of presentation slides. While emergent models of multimodal assessment as such are being developed in theoretical contexts (eg, Cope & Kalantzis, 2000; Kress & van Leeuwen, 2001; Matthewman *et al*, 2004), the study reported in this paper illustrates how multimodal theories can be realized in classroom practice. The findings of this action research are in line with the results seen in Tardy's (2005) qualitative study of four English learners' multimodal design of presentation slides as well as Levy and Kimber's (2009) case study of one secondary school student's PowerPoint creations across 2

years. These studies all underscore the importance of multimodality and call for continued empirical research in the examination of students' multimodal text production.

Conclusion

Digital technology is becoming ubiquitous in classrooms, and thus multimodal texts are used more often in teaching. As compared with printed texts, students' understanding and abilities to cope with multimodal texts are much less developed. The empirical results of this study reveal that teachers can help students develop multimodal literacy through formative assessment that provides explicit instruction on the metalanguage of multimodal texts as one of the instructional approaches in a pedagogy of multiliteracies. As Wyatt-Smith and Kimber (2009) argued, "Until assessment modes and practices align with the nature of multimodal text production, their value as sites for inquiry in classroom practice will not be assured" (p. 70). There is thus an urgent need to develop alternative ways of assessment in support of students' new literacy practices in the digital age. Echoing the call for assessment suited to multimodality, this study demonstrated a measurable improvement in English learners' multimodal text production and reiterated the importance of formative assessment for scaffolding learners' multimodal literacy. It is hoped that the theory-driven design rubric developed in this study can be used as a point of departure to develop a quality assessment of multimodal texts and to provide constructive feedback for multimodal learning and new literacy practices.

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