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# Constructive alignment of materials in tertiary programs

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With the increasing adoption of blended learning, tertiary programs are becoming ever more varied and complicated. Laying at the heart of a range of complex learning activities, the role of blended materials once again comes into discussions concerning learning outcomes. But how do contemporary educators design and use blended materials to support pedagogical goals? In this study, we examine the constructive alignment of blended materials with the learning outcomes of modern language programs. Using pedagogical claims analyses with data gathered in two case studies, we found that educators tend to align materials to the curriculum, student interests, a research agenda and contemporary culture. We conclude our work with a discussion of constructive alignment of materials design and use in tertiary blended learning.

## Introduction

Constructive alignment, or the setting of logical pathways throughout learning to achievement, is a key concept throughout education (McCann, 2017; Onsman, 2015). As programs move to fully integrate technologies in face-to-face settings, the clarity of such pathways may demand much greater attention as blended approaches continue to introduce new complexities (Czaplinksi, 2015). Lying at the heart of many programs, blended material designs and use illustrate the number of factors that come into play when questions of alignment are raised; indeed, as Richards and Rogers (2014) point out, materials design is a core element of programs and one that links theory to practice.

To date, however, here has been little investigation of how materials are aligned to outcomes in blended programs. What constitutes 'pedagogical material' has long been debated (for example, see Tomlinson, 2011; McGrath, 2016), and views of blended learning now attempt to take into account the close relation between materials and technology (Gruba & Hinkelman, 2012; Healey, 2016). In this study, we investigate the ways tertiary educators in modern language programs take into account materials when designing their courses and making use of technologies in blended approaches. Following a review of the literature, we illustrate our work in two case studies through an argument-based approach of pedagogical claims. Our paper concludes with implications and agenda for further study.

## Constructive alignment in tertiary blended programs

According to Biggs and Tang (2011), constructive alignment can help to foster deep learning through a transparent progression of task and activities that can lead to the clear achievement of intended learning outcomes. As a number of studies have shown (Larkin & Richardson, 2013; McCann, 2017; Treleaven & Voola, 2008; Trigwell & Prosser, 2014; Wang, Su, Cheung, Wong & Kwong, 2012; Walsh, 2007), a focus on constructive alignment can enhance pedagogical goals that include fostering deeper learning, developing graduate attributes and improving overall curriculum design.

As shown by Mavor and Tayner (2001), for example, a focus on constructive alignment throughout discussions of curriculum design and teaching can be foundational for interdisciplinary course design. Similarly, in Wang et al. (2012), students who took part in aligned curriculum were found to be more likely to adapt their own styles to meet those in the program and thus engage in deeper learning. For McCann (2017), engaging students with feedback and aligned assessment help to minimize issues of plagiarism.

As we reflected on the works on constructive alignment, we realized that aspects of the concept have been neglected; although the concept of constructive alignment has been used to guide curriculum design, for example, it has not been used extensively to help explain how materials can be used effectively in the blended classroom.

Although work on constructive alignment has largely focused on traditional face-to-face environments, Jones (2007) demonstrates how a program integrates technology to achieve pedagogical purposes, rather than using technology for its own sake. Jones sought to ensure that technology, intended learning outcomes, graduate attributes, pedagogical foundations and activities were each aligned and concluded that a focus on constructive alignment help technology to be in a "serving, rather than driving" role (Jones, 2007, p. 466). Other work, such as that by Barry, Murphy and Drew (2015) shows how student uses of technology may be misaligned to intended learning outcomes. In their study, Barry and colleagues concluded that socio-technological behavior and needs of students must be taken into account to result in a truly aligned curriculum.

Based on earlier work by Gruba and Hinkelman (2012), we see that materials can be seen as a proxy for content that can be situated within a wide view of technology. In this view, the role of technology in blended language learning is manifested in five dimensions: actions, groupings, timings, texts and tools. Here, in line with Laurillard (2012), actions in materials refer to how students act upon the materials, which can be narrative, interactive, adaptive, communicative and productive actions. Groupings refer to students using the materials individually, in pairs or collaboratively. Timings refer to how materials can be used synchronously or asynchronously. Texts refer to the variations of texts which can be multimodal, still or interactive. Finally, tools refer to how materials can be constructed through the uses of software and hardware (Gruba & Hinkelman, 2012).

A third concept in our review concerned materials design and use. The needs to focus on materials arise as blended materials change materials design and use in two ways: the forms of materials and the skills and knowledge needed to design and use materials. The forms of materials are not as clearly defined as they used to be. Gray (2016) categorized materials into published materials, authentic materials and teacher made materials. With blended materials, however, the lines blur between these categories. Published materials can be in print, online, offline, or only available under specific conditions, such as mobile applications. The connectivity and mobility of technology (for examples, massively multiplayer online roleplaying game and social networking sites) make materials authentic as learners are now connected to real audience and they perform real-life communications (Healey, 2016). This also, however, means new challenges for educators to use technology for educational purposes. Second, the skills and knowledge expected of educators in materials design and use are getting more demanding. Technology competency checklists such as TESOL Technology Standards (Healey, Hegelheimer, Hubbard, Ioannou-Georgiou, Kessler & Ware, 2008) include a long list of skills expected of teachers. Rapid advanced in technology is likely to cause these checklists to keep expanding (Kessler, 2016). With these changes in mind, materials become more complex, and educators are challenged to keep materials design and use pedagogically-driven.

## Methods

In this study, we undertook participatory action research through a qualitative case study design. Participatory action research (Kemmis & McTaggart, 2005) allowed us to work closely with the lecturers as we sought not only to investigate their motivations and work but also seek to improve it. After gaining ethics clearance, we began our work in discussion with the lecturers about constructive alignment. How did they come to terms with the complexity of blended materials design? We chose two case studies to pursue our research.

Each case study provided specific insights (Stake, 2010) on how contextual factors can influence alignment practices. The two cases differ contextually in terms of physical settings, groupings and program outcomes. Lecturers of two language programs volunteered to participate in this study. The lecturers used online and offline materials and/or activities during face to face or non-face-to-face learning time. Both programs were offered as breadth subjects that permit students from various disciplines to join the programs.

The first case, BLP1, is a language program aims at developing undergraduates' academic reading, writing and oral skills. The curriculum of BLP1 is designed based on The Melbourne Curriculum (The University of Melbourne, 2016) which offers "blending learning opportunities". This program emphasizes the development of language skills and introducing academic skills including referencing, plagiarism, locating sources and evaluating information. These skills are taught across a wide range of topics focusing on the history of Australia, migration and Australia as a multicultural society. During the data collection, BLP1 was taught through one one-hour lecture, one one-hour tutorial and one two-hour tutorial. In the lectures, the lecturer presented and discussed the weekly readings. In the one hour-tutorials, the lecturer and students engaged in activities to understand the concepts associated with the weekly reading in-depth. In the two-hour tutorials, students participated in hands-on activities to develop language and academic skills based on the weekly readings. The lecturer used a variety of online and offline materials including websites, collaborative writing tools, videos, interactive essay maps, quizzes and polls. The lectures were taught by the lecturer of the program, while tutorials are taught by different tutors. Approximately 120 students attended the lectures, and tutorial groups were limited to no more than 25 students.

Our second case, BLP2, is also a language program aims at developing language proficiency in grammar, vocabulary, speaking, listening, reading and writing. In addition, the program also introduces students to the contemporary culture of the target-language country. BLP 2 is offered as an eight-level program. BLP2 is the level 2 of the program. Some of the materials used in this program included videos produced by lecturers and former students, interactive website, quizzes, audio manga, news clips and websites. The subject was taught through a one-hour lecture and two 90-minutes tutorials. Lectures were conducted by lecturer of this program, while tutorials were conducted by different tutors. Approximately 200 students attended the lectures and 25 students each were enrolled in the eight different tutorials.

After gaining ethics approval, Yoon first worked with the lecturers to help design a set of materials for use in blended configurations. Following that, she observed their teaching and implementation to gain an insider's experience that deepened her understanding of the issues (Patton, 2015). Observations were carried out for 12 teaching weeks covering lectures, seminars, tutorials and field trips. One program was observed for four hours a week while another program was observed for two hours a week. The observation produced description on how materials were used in different configurations.

Yoon also conducted a number of interviews. Unstructured interviews with lecturers were conducted from time to time during the observation. The unstructured interviews were brief and "go with the flow" (Patton, 2015, p. 437). The interviews were conversational (Merriam, 2014), thus we were able to conduct the interviews as soon as significant incidents were observed during the lectures, seminars, tutorials or field trips. Questions asked during the interviews included teaching beliefs and experiences in using the materials. Questions were created based suggestions by Strauss, Schatzman, Bucher, and Sabshin (1981) to include hypothetical, devil's advocate, ideal position and interpretive questions.

After working with the lecturers, Yoon then talked with students in a series of focus group sessions. Eleven students participated, and the sessions were structured in ways that allowed them to recall ideas and think about certain issues in blended learning (Fontana & Frey, 2000). Each session involved two to five students. Finally, in anticipation of examining ways that documents may show the way lecturers think about teaching, we systematically gathered weekly plans, lecture slides, preparation slides and university teaching policies (Bowen, 2009).

In summary, with an aim to cover one entire cycle of design and implementation of materials, we gathered data through 84 hours of class observation, two unstructured interviews, two semi-structured interviews, two focus group interviews and 46 documents from two programs. We then turned out attention to data analysis with a focus on materials and constructive alignment.

## Pedagogical claim analysis

The data analysis method used in this study is an adaptation from pedagogical claim analysis used by Cooper and Brna (2000). Pedagogical claim analysis is a design rationale which allows design issues revolving around identifying and exploring scenarios (Cooper & Brna, 2000). Claim analysis have been used in several studies (Brna, 2008; Carroll & Rosson, 1992) to include stakeholders' perspectives in software development. The use of pedagogical claim analysis is the key to understand materials design and use as both the analysis and constructive alignment explore issues based on pedagogical activities. In pedagogical claim analysis, scenarios here refer to the teaching and learning activities which utilise the materials.

Pedagogical claim analysis used in this study consists of nine elements. Pedagogical claim analysis ensures "pedagogical intentions" (Cooper & Brna, 2000, p. 89) by including pedagogical aim. Other elements included in the pedagogical claim analysis are scenario, claim, support, because, check rule and issue. As both cases involved in this study were language programs, the researchers expand the pedagogical claim analysis to include language focus and skills. Table 1 shows a sample of pedagogical claim analysis. The inclusion of language focus and skills ensure that the scenarios are language-focused. Pedagogical claim analysis allows us to illustrate the intertwining relationships among the materials, pedagogical aim, teaching and learning activities and constructive alignment based on specific scenarios.

*Table 1. A sample of pedagogical-language claim analysis*

| Element | Detail |
|---|---|
| Scenario | Talking about opinion and reporting information in the past. |
| Material | Flash card (PDF) |
| Language focus | Past tense short form for verbs and adjectives (affirmative and negative) |
| Language skills | Listening and speaking |
| Claim | Lecturer introduces vocabulary and verb forms to enable students to do speaking activity. |
| Support | Lecturer provides input for speaking activity. |
| Because | Students need to conjugate language structures and use new vocabulary. |
| Check rule | Students participate in a dialogue activity with two or three friends. |
| Issue | Students only use prescribed sentences in the speaking activity. |

The method begins with identifying key scenarios (Cooper & Brna, 2000). Key scenarios in this study refer to teaching and learning activities and the materials associated with the activities. Scenarios were identified at the pre-teaching and teaching stages. Identification of key scenarios lead to generation of claims. Claims are generated and validated throughout cycle 1 of data collection. Generating and validating claims helped to understand how and to what lecturers align materials in each scenario. The claim analysis informed the source of evidence needed to validate the claims. Claims also evolve based on the evidence gathered, resulting in some claims to have newer versions. The claims were revised and validated (Cooper & Brna, 2000) based on the different sources of data collected.

Similar to Cooper and Brna, (2000), generating a number of claims in this study has two main benefits. First, the claims help in illuminating the lecturers' decision-making process explicitly. Second, it allows researchers to identify priorities in materials design and use. This method is not without challenges. Due to the changes made on claims while revising and validating, tracking changes in claims can be challenging. In fact, storing a high number of claims tends to be 'messy' (Cooper & Brna, 2000). Therefore, Cooper and Brna, (2000), recommend setting up a systematic claim management system at the early stage of the research.

# Findings and discussion

A total of 23 claims have been generated from the data. The claims are categorised into six categories (see Table 2). Findings reported in this paper discuss briefly each of these categories.

*Table 2: Categories of claim*

| Categories | Number of claims |
|---|---|
| Learning outcome | 11 |
| Curriculum | 3 |
| Students' interests | 3 |
| Assessments | 2 |
| Lecturer's research interests | 2 |
| Contemporary culture | 2 |

## Aligning materials to learning outcomes

Lecturers aligned online and offline materials to learning outcomes. Learning outcomes refer to language skills, language use, and transferable skills which are stated in the program handbook. A total of 11 claims showed that materials were aligned to learning outcomes. Table 3 shows an example of claim in which materials are aligned to learning outcomes. Lecturers from both programs also explicitly stated the weekly learning outcomes in their materials.

*Table 3: Aligning materials to outcomes*

| Element | Detail |
|---|---|
| Scenario | Question and answer about weather |
| Material | Forecast report on a website |
| Language focus | How to report temperature |
| Language skills | Speaking |
| Claim | Aligning materials to real life usage |
| Support | Language is used in authentic setting. |
| Because | Language form is used in a website. |
| Check rule | Lecturers asks questions to the whole class. Students answer lecturer's questions using the new structure based on the information in the website. |
| Issue | Not all students answer lecturer's questions. |

## Aligning materials to curriculum

Materials, of course, were explicitly aligned to the Melbourne Curriculum (The University of Melbourne, 2016). Due to Melbourne Curriculum, lecturer of BLP1 integrated Australian culture, values and history into the program. According to lecturer of BLP1, the program "try to provide something that reflects the nature of Australia and particularly Melbourne". A total of three curriculum-related claims have been generated. Table 4 shows a sample claim of aligning materials to the Melbourne Curriculum. Data gathered from focus group interviews showed dividing views about the inclusion of historical events in BLP1. While two students applauded the inclusion of topics related to indigenous and culture of different migrant groups, three out of five students also thought that there were too many historical events covered in BLP1. Commenting on the topics, one student comment that "it turned out to be like a history paper" more than what had been expected.

*Table 4: Aligning materials to the Melbourne Curriculum*

| Element | Detail |
|---|---|
| Scenario | Introducing Vietnamese migration |
| Material | A video of an Australian-Vietnamese working as an Australian police officer. |
| Language focus | Vocabulary |
| Language skills: | Listening and speaking |
| Claim 10.1 | Aligning materials to historical event |
| Support | Provide students background information to understand multiculturalism in Australia. |
| Because | Students learn about Australian values and cultures. |
| Check rule | Students talk to each other based on the three questions prepared by the lecturer. |
| Issue | Students need some historical knowledge on Vietnam in order to understand Vietnamese migration. |

## Aligning materials to students' interests

Students' interests, their background and perceived needs was another point of alignment. A total of three claims support that lecturers aligned materials to students. In aligning materials to students' interests, lecturer of BLP2 firstly introduced new structures which were the different forms of expressions. Then, she used audio manga to present how the forms are used in real-life situations. In the focus group interview, a student stated that he was interested with popular culture such as manga. This statement corroborates with the lecturer's experience that students are more interested with popular culture compared to historical events. In BLP1, a student also commented that he liked how the topics were related to popular culture that he said, "I like to make the link between academic knowledge, academic references to broader, shared culture like songs".

In another scenario, in BLP1, lecturer chose materials which reflected the students' needs in language learning. In a tutorial in which the lecturer used a collaborative writing tool, the students felt that the materials helped them to learn writing better. Students wrote and presented their answers. Then, the lecturer pointed out the mistakes and the students corrected them. Student 02 said that the collaborative writing tool allowed them to see each other's answer and think from other students' perspectives.

## Aligning materials to assessments

Assessments, both written and oral, were another key point of alignment for the lecturers. There are two claims which show that lecturers used materials to show how students can perform better in assessments. In BLP1, lecturer organized a field visit to a gallery. Students were asked to record a video of themselves presenting a painting. The videos were shown in the following tutorial. Student 04 mentioned that he was able "correct all the things which are not good" after watching the video of himself presenting during the field trip. From the observation, it seemed that students were able to point out on useful expressions for the oral assessment. However, they sometimes commented on other elements which were not related to the oral assessment such as video-editing and background noise.

## Aligning materials to lecturers' research interests

The research interests of each of the lecturers inspired some points for alignment. A total of two claims have been generated. Both lecturers teaching BLP1 and BLP2 stated that some of the materials used reflected their research areas. For example, Lecturer of BLP1 used an excerpt of an article she wrote on intertextuality to highlight the issues to plagiarism. She felt that selecting what to include in the program allowed her in "approaching some of the work I did in case studies, more from an identity perspective". In a similar vein, lecturer of BLP2 also stated that she connected her sociolinguistic background to the materials such as gender and discourse.

## Aligning materials to contemporary culture

Finally, contemporary political, social or economic issues provided a basis for the alignment of materials. In our analysis, two claims focused on housing and food culture emerged. When teaching about traditional houses, lecturer first showed an interactive website to introduce the vocabulary related to the topic. Then, she showed the different houses around the country. Finally, she showed a video on micro apartment, which is gaining grounds among the young house buyers. She explained to the students that this issue is happening due to the expensive cost of houses in the country. It is noteworthy that a possible problematic issue for aligning materials to contemporary culture is that students may not have the experience to talk about the issues in the target-language country.

## Challenges of aligning materials

The present findings suggest two challenges faced by lecturers in aligning materials. First, avoiding misalignment between materials and learning outcomes. This scenario was depicted in learning and using referencing styles. In this activity, lecturer directed students to read a website which contains information about referencing styles and formats. One student expressed that she was not sure if this activity was beneficial. In the focus group interview, she suggested that an independent and online exercise could had been added in the LMS to facilitate the mastery of referencing

styles. BLP1 not meeting the learning outcomes is summed up by another student:

> I think this subject didn't get my expectation. The knowledge they taught is not perfectly linked to the handbook, what the handbook written…they should give us students more practice and more exercises to ensure that we know all the knowledge we intended to know.

Another type of misalignment happened when lecturers did not ask students to respond the materials. Table 5 shows a sample of misaligning materials with learning outcomes. Students only watched videos of songs, news excerpt or documentary excerpt without responding to the videos in oral or written forms. Failure to ask students to respond to an activity could result in a lack of alignment as students were expected to complete several assessment tasks based on the factual knowledge presented through the materials (Biggs & Tang, 2011).

*Table 5: A sample of misaligning materials with learning outcomes*

| Element | Detail |
|---|---|
| Scenario | Introducing events related to the 'Stolen Generations' |
| Material | A video of song produced by an indigenous singer. |
| Language focus | Vocabulary |
| Language skills | Listening |
| Claim 6.1 | Aligning materials to learning outcomes |
| Support | The song is written from the point of view of the indigenous people, describing the significance of 'Stolen Generation' to the indigenous community. |
| Because | Students are not familiar with the historical event. |
| Check rule | None |
| Issue | There is no follow-up activity after watching the video. |

Second, the findings seem to indicate that lecturers struggle to strike a balance in aligning materials to meet curriculum and students' needs. There were dividing opinions on aligning materials with curriculum among the lecturers and students. While lecturers defended the need to align materials to institutional curriculum, students thought that the curriculum aligned-materials failed to cater to students' needs. In selecting topics for BLP1, the lecturer felt the need to "provide something that reflects the nature of Australia and particularly Melbourne". In the university website specifying graduate attributes, one of the attributes is "Active Citizenship" which states that "graduates are aware of the social and cultural diversity in communities and can work collaboratively with people from diverse linguistic and cultural backgrounds" (The University of Melbourne, 2017). However, some students felt that the historical topics covered in BLP1 did not cater to their interests. When asked on what they liked least about the program, students mentioned that the topics were "boring" and "doesn't match my interests".

In summary, materials in the blended tertiary programs studied aligned to learning outcomes, students' interests, assessments, lecturers' research interests and contemporary culture. Nevertheless, there are also evidences suggesting possible misalignment between materials and learning outcomes. Analysis also points to contradicting evidences in aligning what curriculum requires and what students want.

## Implications and conclusion

As blended learning becomes increasingly immersed in tertiary programs, there is a need for a guided, pedagogically-led framework for programs planning and implementation, especially in using materials in a blended environment. Gruba and Hinkelman (2012) proposed four considerations in planning and implementing blended learning: purpose, appropriacy, multimodality and sustainability. Purpose ensures that actions in a program are enacted based on pedagogical principles. Appropriacy of blended learning ensures that a program fits the diverse linguistic and cultural backgrounds of the students. Multimodality in blended learning offers different modes for knowledge to be communicated to students (Kress, 2000). Sustainability allows materials to be transferable, adaptable and reusable.

The key problem with this proposition is the exclusion of alignment as a consideration as crucial as purpose, appropriacy, multimodality and sustainability. This study contributes to the consideration of blended learning proposed by Gruba and Hinkelman (2012) by suggesting the inclusion of alignment as the fifth consideration. Although Biggs and Tang (2011) proposed three elements for alignment, in blended environment, alignment can also include a number of other elements. The findings suggest that apart from learning outcomes and assessment tasks, alignment in blended environment can also include curriculum, students' interests, lecturers' research interests and contemporary culture.

The findings also reported misalignment between materials and learning outcomes. Misalignment found in this study seems to affirm with Wang et al. (2012). They noted that lecturers' awareness on designing constructive aligned programs is still low, and this needs to be addressed through professional development. In designing and using materials, teachers engage in local configurations, that is, trying out new materials and revise them according to the contextual needs (Blin, Jalkanen & Taalas, 2016). Sustainability use of technology not only need professional development in training teachers to

revise materials, but also the ability to revise teaching activities and align technological changes to the activities and learning environment (Blin et al., 2016).

Based on the number of claims, it seems that lecturers mostly aligned materials to learning outcomes, followed by curriculum. In aligning materials to learning outcomes, at times, lecturers seem to treat students as receiver of information when using audio-visual materials to provide information (Laurillard, 2012). This situation is probably because lecturers are not well-informed in didactics design for blended learning (Mozelius & Rydell, 2017). By themselves, as Laurillard (2012) reminds us, materials do not magically support active learning as it is lecturers who must foster active engagement.

Although the findings affirm Biggs and Tang (2011) who discuss learning outcomes, teaching and learning activities and assessment as the core elements in constructive alignment, curriculum has been placed in much higher emphasis in this study. This is probably due to the fact that curriculum is seen as mandated, as curriculum has been stated explicitly in a university's strategic plan. In the strategic plan, curriculum is stated as one of the strategic priorities for high quality teaching and learning (The University of Melbourne, 2015). Thus, there is potentially a conflicting area in striking a balance between aligning materials to meet curriculum and students' needs. This situation mirrors Laurillard (2012) that curriculum often reflects the requirements of the authorities, rather than meeting what the disciplines need. Lecturers often have to decide to empower students with some control of learning and risk not having enough time to cover the curriculum, or cover the curriculum but not empowering students to control the direction of the learning process in class (Hussey & Smith, 2003). Lecturers and students in this study seemed to fall into this conflicting situation.

Finally, in data analysis, the study shows that pedagogical analysis can help to verify claims through the use of language and pedagogic reasoning. Furthermore, it also helps to identify problematic issues in using materials. The use of specific scenarios helps in illustrating details on how materials are designed and used in blended environment. Further analysis needs to be done to explore what other elements are involved and the relationship between these elements in aligning materials. Reflecting from a claims perspective, generating claims with language skills and focus added posed some challenges. Some of the claims did not involve every element in the pedagogical claim analysis. For example, claims related to culture do not involve check-rule. Likewise, claims related to policy do not involve language skills and focus. This resulted in different ways in making sense of the claims.

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