



REFLECTIVE PAPER

# When DDL Goes Wrong: The importance of constructive alignment for learners and teachers in DDL contexts

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## Abstract

This reflection on practice study explores the critical role of constructive alignment (CA) in the successful implementation of corpus-based data-driven learning (DDL) in secondary education, focusing on two interventions conducted at an Australian secondary school. While DDL offers potential for enhancing language learning through corpus consultation, its integration into secondary school contexts remains hindered by limited teacher training, administrative support, or alignment with pedagogical goals. In this exploratory study, one DDL intervention targeting passive voice use in science writing succeeded, yielding learning gains and positive feedback. However, a parallel intervention for English as an Additional Language/Dialect (EAL/D) students, which aimed at mastering cognitive verbs, failed despite identical resources and the assistance of an experienced DDL practitioner. Qualitative data from students' discussion forum responses, written

assignments and revisions, and post-intervention group interviews suggest the failure stemmed from a lack of CA, as materials designed for one cohort were misaligned with the EAL/D learners' needs, prioritising discrete linguistic items over functional understanding. Student feedback highlighted a preference for simpler tools like Google, reflecting poor engagement with DDL. Our findings suggest that without aligning DDL activities, learning outcomes, and assessments to the teachers' and learners' contexts, interventions risk failure. We therefore advocate for increased backward design, teacher-researcher collaboration, and ongoing evaluation to ensure DDL's efficacy, offering a cautionary tale for future implementations.

### **Keywords**

Data-driven learning; English as an additional language; constructive alignment; secondary education

## **1. Introduction**

Data-driven learning (DDL) is an inductive approach to language learning where learners explore authentic language patterns in corpora (and now also AI output) to discover linguistic rules and usage for themselves (Johns, 1990). Attempts to introduce data-driven learning (DDL) in secondary education are still relatively limited in the literature, with typical reasons including a lack of corpora and corpus software designed specifically for use with young learners and a lack of corpus literacy reported for pre- and in-service teacher trainees (Crosthwaite, 2019). However, advances in the availability of a range of spoken and written corpora and the improved accessibility and functionality of online corpus tools (e.g., SKELL, Baisa & Suchomel, 2014; Linggle, Boisson et al. 2013) have opened the door to new possibilities for DDL for younger learners. Clearly, there is also significant interest in DDL from those outside of tertiary education, with numerous funded initiatives (e.g., Lancaster's Corpus for Schools project, O'Boyle and Viana's Making Best Use of Corpora for English Language Teaching) now tasked with the production of extensive secondary-level teacher education resources for corpora and DDL. That said, issues yet to be resolved include a general lack of awareness of DDL among secondary educators, a continued lack of support from education administrators and/or policymakers, and a significant lack of understanding by the main stakeholders involved about how to incorporate DDL into secondary education. As noted in Pérez-Paredes (2019a), applied linguists are typically not the main stakeholders here (despite their best intentions). Rather the main stakeholders are the schools, teachers and students themselves.

The issue of incorporation and eventual integration of DDL into secondary education is a typical complaint for DDL researchers attempting to break into this educational sector. One reason is a general lack of formal teacher education focused on computer-assisted language learning (CALL) in several contexts, with many Teachers of English to Speakers of Other Languages (TESOL) graduates for example obtaining a majority of their CALL knowledge from informal sources and personal experience (Kessler, 2007). However, applied linguists must also shoulder much of the blame here too, and it is highly likely that many corpus linguists, corpus builders or corpus tool developers have never actually taught students outside of tertiary contexts, leaving us (i.e. the corpus linguistics community) a world away from what might actually be going on in the secondary classroom.

Constructive alignment is an instructional design approach based on constructivist theory that ensures curriculum objectives, teaching activities, and assessment tasks are aligned to promote clear learning outcomes and enhance student motivation (Biggs, 1996; Stamov Roßnagel et al., 2021). Crucially, the lack of constructive alignment between what DDL practitioners believe will work to improve classroom learning and the pedagogical didactics, goals and beliefs of secondary school teachers and their students has prevented and still is preventing continued and sustained use of DDL beyond one-off applied linguist-led DDL teacher education workshops. We also wonder how many attempted DDL

interventions have not succeeded compared to those that have, given successful interventions are much more likely to be written up and eventually published.

Wishing to set an example, this study describes two separate DDL interventions conducted in an all-female secondary school context in Queensland, Australia, at the height of the COVID-19 pandemic. One intervention was considered a success, with empirical learning gains and positive qualitative reflections reported (Crosthwaite & Steeples, 2024). Importantly, however, this study focuses on why the other DDL intervention failed despite the best efforts of a (by now) experienced DDL practitioner with access to state-of-the-art DDL resources, and despite the use of a largely identical pedagogical model to that of the successful intervention. In charting the background to and reasons for this failure, this study aims to serve as a practical guide and a warning to those looking to conduct future DDL interventions in school contexts without first carefully considering whether and how the intervention is to achieve constructive alignment with both teachers' and learners' established goals and needs.

## **2. Constructive alignment and DDL**

Constructive alignment (henceforth CA, Biggs, 1996) is a concept combining instructional design methodology with constructivist learning theory. CA occurs when instructional design is in line with the goals of a course or unit and with the benchmarks for measuring student achievement. Constructivism is used as a framework to guide decision-making at all stages of instructional design. This includes a) when curriculum objectives are in line with student performance at the cognitive level; b) when teaching/learning activities are chosen that elicit said performance; and c) when teachers later evaluate and summarise that performance. Thus, the teaching strategies and the assessment are methodically aligned with the learning objectives. From a student perspective, clarity of intended learning outcomes, the alignment of teaching-learning activities and assessment tasks, and effective feedback as found under CA are associated with higher student motivation (Stamov Roßnagel et al., 2021).

Meunier (2019a) has discussed the relationship between CA and DDL in relation to the frequently asserted facilitation of constructivist learning by DDL, which involves learners creating meaning through active corpus consultation. For CA to be achieved, a positive learning environment involving the active engagement of students with corpus data must be made available, assessments must allow teachers to judge whether student engagement with corpora has made it possible for the learning outcomes to be met, and how DDL can help students achieve learning outcomes must be explained. Meunier (2019b) emphasises the significance of actively listening to teachers' and learners' needs as well as providing direct support for teachers' efforts to adopt DDL in order for there to be positive CA.

While these points are particularly salient in relation to DDL, they are equally relevant to language learning more broadly. As Rouffet et al. (2022) argue, constructive alignment between learning goals, classroom activities, and assessments is a prerequisite for effective language teaching. Their investigation of Dutch secondary foreign language education reveals a significant disconnect between national communicative language teaching (CLT) goals and classroom realities, where instruction and assessment tend to focus on decontextualised grammar and vocabulary, with limited attention to communicative competencies. The study highlights that both external factors (such as available teaching and testing materials) and conceptual factors (such as teachers' beliefs about language learning) contribute to this misalignment.

At the same time, it is important to recognise that CA should not be seen as either a cure-all or a threat to good teaching. As Loughlin et al. (2020) argue, CA was originally conceived as a practical framework to support thoughtful curriculum design and student-centred learning. However, if applied primarily for managerial or accountability purposes, it risks being reduced to a checklist exercise, losing its educational value. Such uses can lead to resistance from teachers, who may perceive learning outcomes and alignment as tools of control rather than enablers of learning. CA should rather be seen as a reflective tool for professional practice. Designing learning environments, whether they are DDL-

based or not, requires aligning activities and assessments with clear, meaningful learning outcomes, supported by both structural and pedagogical measures to help teachers implement this alignment effectively.

To fully realize CA's potential as a reflective tool rather than a simple compliance exercise, teachers need support not only in structuring clear, meaningful learning outcomes but also in integrating the necessary technological and pedagogical knowledge to deliver them. In this regard, the technology pedagogical content knowledge (TPACK) model proposed by Mishra and Koehler (2006) provides a useful lens: by illustrating how content knowledge, pedagogical knowledge, and technological knowledge must converge, TPACK highlights the specific challenges of implementing constructively aligned DDL activities in practice, challenges that arise precisely where technology, pedagogy, and subject matter intersect. While teachers may have strong content knowledge (CK), pedagogical knowledge (PK) and technological knowledge (TK), most DDL training falls short of instruction on integrating the three. This then makes it difficult for teachers to align learning objectives, curriculum, and evaluation with the kind of learning made possible through corpus consultation, especially when it comes to improving students' understanding of the patterned nature of authentic language-in-use. To address these issues, teachers need to broaden the range of DDL tools and activities used to involve students in achieving their learning outcomes, and switch from assessing *closed* linguistic outcomes to assessing autonomous, learner-centred *open* outcomes for corpus consultation. Instead of checking whether learners have learned some new words or expressions, the focus should be on whether learners have developed effective search strategies to solve complex and meaningful language related issues.

Examples of low-, mid- and high-TPACK DDL lesson plans are provided in a study conducted with language teacher trainees in the Indonesian EFL context in Crosthwaite et al. (2023). TPACK levels were defined through the strength of alignment between the plan elements, integration of technology and curriculum goals, integration of technology and instructional strategies, appropriacy of technology selection(s), and the *fit* between these elements, using Harris et al.'s (2010) Technology Integration Observation Instrument. Higher-TPACK lesson plans demonstrated the use of corpus tools to generate learning materials such as gap fills or quizzes for L2 students, while directing students to consult textual and visual corpus output involving L2 target genre-appropriate corpus data or to check their L2 learner texts for matching rhetorical features in alignment with the overarching lesson objectives. Corpus use in lower-TPACK lesson plans was limited to searching for words or involved goals that would be difficult for novices to achieve with the corpus tools used, e.g., using Sketch Engine for language learning (SKELL) to understand the generic structure of report texts.

While the range of high-/low-TPACK DDL-focused lesson plans reported in Crosthwaite et al. (2023) were somewhat stark, as would be expected from pre-service language teacher trainees with limited corpus experience, sometimes the experts can get it wrong as well. In the section that follows, we demonstrate how an apparently straightforward choice to reduplicate DDL materials meant for one group for a group with a different set of learning outcomes essentially doomed the latter intervention to failure.

### 3. Method

This study employed a practitioner-led, reflective approach to evaluate two data-driven learning (DDL) interventions conducted in an all-female secondary school in Queensland, Australia, during summer 2020 amid the COVID-19 pandemic. The interventions targeted two distinct cohorts: Year 7-12 Science students (L1 English) focusing on passive voice use in research writing, and EAL/D students (B1-B2 CEFR) aiming to master cognitive verbs. Both utilised online corpus tools (SKELL, Linggle, BAWE via the edX online learning platform) across five-to-six taught online modules. Several data sources were triangulated and subject to deductive thematic analysis to determine the presence or absence of CA. The following describes each of the above in more detail.

### *3.1 Research context and participants*

In the summer of 2020, the first author was invited to conduct a workshop for all teaching staff at the abovementioned secondary school. The teachers were encouraged to attend as part of annual ongoing professional development, with the director of studies particularly keen to emphasise the potential benefits of using corpora and DDL for the increasing numbers of students at the school who use English as an additional language/dialect (EAL/D). The workshops took teachers through the basics in usage-based approaches to understanding both first and second language acquisition, how corpora could help speed up this process, the basic functions of the SKELL and Sketch Engine platforms, and an idea-sharing session on how teacher and/or learner corpus consultation could be used in teaching practice across the school.

Following this workshop, two cohorts of teachers wished to implement DDL into their teaching practice. One cohort was comprised of teachers who were responsible for Year 7-12 Science classes and who wished to use corpora to improve students' use of the passive voice for research report writing, while the other was comprised of two teachers responsible for co-curricular EAL/D provision who sought to use DDL to improve learners' knowledge of the function of cognitive verbs (e.g. judge, determine, discuss) and to reduce reliance on online dictionaries and translation websites. Cognitive verbs are an important part of the P-10 Australian Curriculum, signalling to students "the type of mental operations they are to use when demonstrating what they know, understand and can do", and are employed across the vast majority of school subjects (QCAA, 2022).

The science cohort was comprised of 24 monolingual L1 English users, while seven EAL/D students were all considered to be between B1-B2 levels of the Common European Framework of Reference for Languages (CEFR) from a range of indigenous Australian and L2 language backgrounds. EAL/D classes involve additional co-curricular lessons for L2 learners covering mainstream subject content (e.g., English literature, geography, history, etc.). The EAL/D teachers use a range of pedagogical means to differentiate materials written for L1 English users for use with the EAL/D users. Importantly, both interventions were to run simultaneously, which in hindsight placed significant additional demands on the researcher and teachers involved. This was not helped by a lengthy, protracted ethics review process (almost inevitable when working with school-age participants), which resulted in a very limited timeframe for materials development following ethical approval and participant recruitment.

### *3.2. Data collection and analysis*

Qualitative data were gathered in naturalistic contexts and included: (1) student discussion forum responses reflecting on the online DDL activities (e.g., understanding "judge"); (2) post-intervention group interviews with EAL/D students exploring tool preferences with teacher feedback and anecdotal observations (e.g., classroom engagement shifts); and (3) written assignments and corpus-assisted revisions (e.g., essays on *To Kill a Mockingbird*), color-coded by tool use and annotated with instructor feedback. Data triangulation was employed to cross-validate findings and enhance credibility across student, teacher, and practitioner perspectives. Thematic Analysis (Braun & Clarke, 2006) of this triangulated data centered on constructive alignment (Biggs, 1996), assessing alignment between learning objectives, DDL activities, and outcomes. All coding was manually conducted and checked by the first author using a deductive theory-driven approach to investigate CA (or lack thereof) within each data source, involving the stages of data familiarisation, coding, searching for themes, reviewing themes, defining/naming themes, and writing up. Reflective comparison of the interventions' success and failure as realised through the CA lens later informs practical recommendations for future DDL implementations found at the end of this study.

## 4. Results

### 4.1. Online DDL Materials

Given previous involvement with the development of online materials for DDL on the edX online learning platform (Improving Writing Through Corpora, Crosthwaite, 2020), additional activities were produced for both the science and EAL/D cohorts on edX primarily to reduce the impact of COVID-19 disruption on school visits. Both sets of materials spanned five to six modules, with the first module introducing the concept of corpus and why corpora might be advantageous over more traditional language reference resources such as online dictionaries or translation websites, particularly for multi-word expressions / phraseology and disciplinary lexis. The next modules guided students through the basic functions of SKELL, the open version of Sketch Engine with the British Academic Written English Corpus (BAWE, chosen as the students were also producing academic English), Linggle and Flexible Language Acquisition (FLAX – Fitzgerald et al., 2017), with the science modules focusing on the use of the passive voice for research report writing, while the EAL/D modules used the same functions to acquire six specific cognitive verbs (*judge*, *describe*, *justify*, *demonstrate* and *explain*) selected from teachers' Year 12 examination materials (Figure 1). Both sets of materials are available to view on the course website<sup>1</sup>.

**Figure 1.**

*Overview of online DDL modules*

|                                                                      |
|----------------------------------------------------------------------|
| ✓ Ipswich Girls - Physical Science corpus activities                 |
| ✓ Module 1 - Introducing corpora                                     |
| ✓ Module 2 - Science Writing and Corpora                             |
| ✓ Module 3 - Exploring collocation through 'word sketch' and Linggle |
| ✓ Module 4 - Exploring a corpus of academic writing                  |
| ✓ Module 5 - Limiting searches to Physical Science                   |
| ✓ Ipswich Girls - EAL/D corpus activities                            |
| ✓ Module 1 - Introducing corpora                                     |
| ✓ Module 2 - Judge                                                   |
| ✓ Module 3 - Describe                                                |
| ✓ Module 4 - Justify                                                 |
| ✓ Module 5 - Demonstrate                                             |
| ✓ Module 6 - Explain                                                 |

Importantly, work began on the science materials on the passive voice first, which were then modified to focus on cognitive verbs for the EAL/D cohort. While the teachers themselves provided the justification for focusing on cognitive verbs with the EAL/D cohort in line with QCAA curriculum objectives, it can be argued that this is the first point in the

<sup>1</sup> <https://edge.edx.org/courses/course-v1:UQx+SLATx+2019/about>



design process of the DDL materials where constructive alignment for the EAL/D cohort was reduced. The DDL activities created for the passive voice were necessarily discrete and grammar focused. However, the EAL/D teachers' original objective was not to retrofit grammar-focused activities to concentrate on the usage of the cognitive verbs themselves as separate, discrete target language items, but to explore the different language options involved in achieving their function. For example, the Science cohort was introduced to SKELL in Module 2 ('Science Writing and Corpora') with the student participants reporting on an experiment involving rubbing a metal rod to see how friction generated static electricity (Figure 2).

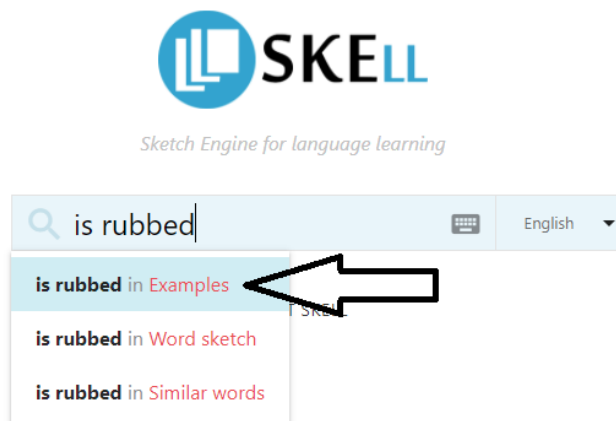
**Figure 2.**

*Sample activity targeting passive voice in SKELL*

In this unit, we are going to compare the use of the **present passive** vs. the **past passive**, using SKELL. Below is a list of the 10 most frequent verbs as they occurred in your science experiment data, in decreasing order of frequency:

**1) is; 2) was; 3) were; 4) rubbed; 5) rubbing; 6) applied; 7) moved; 8) using; 9) measured; 10) charged**

Let's start by looking at some results for "**is rubbed**".



Here are some results taken from SKELL.

10. Afterward ink **is rubbed** into the carved areas and away from the flat surface.
11. On the positive side I use a Ketoprofen compound that **is rubbed** on directly.
12. Physical irritation may result from friction, such as when the skin **is rubbed** too intensely.
13. It is dipped in the mixture which **is rubbed** on the mouth of the cattle.
14. In a liquid or foam, it **is rubbed** into the scalp twice a day.
15. The couche is heavily dusted with flour which **is rubbed** into the pores of the fabric.
16. If a needle **is rubbed** on a lodestone or other magnet, the needle becomes magnetized.
17. Generally it **is rubbed** out with the fingers and palms until it is loose enough to pack.
18. It **is rubbed** on the lower abdomen from the belly-button to the beginning of the pubic area.
19. Hair is shaved off and sandalwood powder or paste **is rubbed** in to stop the scalp from being
20. His shoulders are draped with the leopard's skin and again more lion's fat **is rubbed** on him.

Take a few minutes to look through these example sentences provided by SKELL. Do not worry if you don't understand all of them!

What do you notice about the use of "is rubbed" in these example sentences? – Check ALL that apply

"is rubbed" can be used when describing 'facts' that are always true, as you might see in the rationale section of a research report

"is rubbed" can be used in sentences describing a sequence of instructions for a procedure, although the time/duration is not specified.

"is rubbed" can sometimes be used together with "if" statements, as you might see in the rationale section of a research report when making hypotheses

"is rubbed" can be used to describe what happened during a procedure that has now finished, as you might see when describing the methodology of a research report.

This activity takes the most frequent passive voice construction extracted from the students' reports ("is rubbed") and explores its usage, with some reflective questions following the scaffolded corpus-assisted activity focusing on the function of this construction within the context of a research report. Thus, the activity and subsequent formative assessment questions are aligned with intended learning outcomes, namely, to understand the functional use of the passive voice for research report writing. The EAL/D cohort received a similar exercise, shown in Figure 3.



**Figure 3.**

*DDL activity covering verb forms of "judge"*

### **JUDGE IN SKELL**

In the previous unit, we learned about the tool SKELL. Below, you can see the results for the word *judge* in SKELL.

Note – there are 40 results here. You can scroll the results up and down.

The screenshot shows the SKELL tool interface. At the top left is the SKELL logo. To its right is a search bar containing the word 'judge'. Below the search bar are three tabs: 'Examples' (selected), 'Word sketch', and 'Similar words'. To the right of the search bar is a language dropdown menu set to 'English'. Below the search bar, the word 'judge' is displayed in a large font, followed by '118.56 hits per million'. Below this, a list of 10 example sentences is shown, with the word 'judge' or its forms highlighted in red:

1. This corrupt **judge** is apparently having temporal delusions.
2. Principal means whereby each lifetime is **judged** .
3. Local **judges** were left looking slightly foolish.
4. Modern breeding standards **judge** health +character too.
5. To **judge** has been greatly misunderstood today.
6. The administrative **judge** may appoint a judicial assistant.
7. They are routinely **judged** at government hospitals.
8. Your soul is real and being **judged** is real.
9. More democratic fractures are inherited by three district **judges** .
10. We really were **judged** for those things!

From these results, you can see the following information.

- 1) The verb *judge* has three forms – to judge, judged and judging.
- 2) Figure skating, competitions, and exhibits are all things that can be judged.

*Can you find two more things that can be 'judged' in these results? Write your answers in the discussion forum below.*

What can be 'judged'?

Topic: IGGS Module 2: EAL/D / Topic-Level Student-Visible Label

[Hide Discussion](#)

[Add a Post](#)

The screenshot shows a discussion forum interface. At the top, there are two dropdown menus: 'Show all posts' and 'by recent activity'. Below these, there are two posts:

- Post 1:** The title is 'What can be 'judged'?'. The content is 'Figure skating, competitions, and exhibits are all things that can be judged. Can you find 2 more things that can be 'judged' in these results? Write ...'. It has 4 replies and is marked as a 'Staff' post.
- Post 2:** The title is 'what can be judged?'. The content is 'everything can be judged life, live, people, work, place, air, color...etc'. It has 1 reply.

[STAFF DEBUG INFO](#)

This activity explores the usage of the target verb *judge* in SKELL, with students asked to find examples of things that can be judged from the concordances before posting their answers in a discussion forum for sharing with other students. While a potentially useful activity in helping students explore the meaning of *judge*, the DDL activity and subsequent reflective formative assessment (in the form of the open discussion forum question) is arguably not in constructive alignment with the intended learning outcome, that of helping students explore the language involved in making judgements. The remainder of the activities in this module required students to use the Word Sketch function of SKELL to explore subjects, objects and modifiers of the word *judge* in line with similar activities produced for the Science cohort, but again the focus of these activities was not constructively aligned with the intended learning outcome. Unfortunately, given the very short lead-in time to get the materials developed, the EAL/D teachers were largely out of the loop on this decision until the intervention was ready to begin.

The last taught activity of this module asked students to query the term *judge* objectively, which was revealed as a modifier of *judge* in a previous activity. Students were asked to read concordances in SKELL before making a decision about what kind of things in the corpus could be judged objectively in their own words. This activity was designed in an attempt to restore some degree of alignment with the intended learning outcome by getting students to think about how to judge based on their close reading of the retrieved concordances. Positive responses included:

*to judge objectively is to judge in a way that is not influenced by personal feelings or opinions.*

*Judge objectively such as to give positively or kindly suggestions to kinds of stuff, which usually such comments.*

However, the unaligned, discrete focus of the previous activities caused some students to miss the intention behind the activity and to focus instead on alternative, law-focused senses of *judge*:

*Everyone in the world is judge objectively by the same law.*

*It is to judge a person or thing and their opinion by the same law*

As a final activity in this module, students were asked to post personal reflections on the activities in this module in a discussion forum. Students were asked to comment on:

*a) Do you feel that you have a better understanding of the word 'JUDGE' after completing these exercises? If so, why? If not, why not?*

*b) Was using SKELL to learn about 'JUDGE' useful? If so, why? If not, why not?*

*c) Can you write in one sentence what you think 'JUDGE' means now?*

Regarding the first question, students' responses (original text not edited) included:

*NO, because it just talk about how judge use.*

*Sort of, because it doesn't really explain in depth about the word 'JUDGE' and what it means*

*No not really. It was just talking about how to use 'JUDGE' and where to put it in a sentence.*

Clearly students were quick to recognise the lack of alignment between the activities and the intended learning outcomes regarding the function of cognitive verbs. Students' responses for Question b on the usefulness of SKELL included:

*Yes, Because it show me that I can put in other word to word on thing such has English and history. Skell helped me by learning new things.*

*Yes, because it provides further more information than google and other websites that we use to find meanings*

*It is useful, but the process of understanding wasting more time than the dictionary.*

Students did, therefore, see the value of using SKELL for exploring language related to *judge* despite the lack of alignment, although as shown in the third example above, they were also critical about the approach to be taken.

The ultimate test of whether the activities had succeeded in the intended learning outcomes was students' responses to the third question on what *judge* means.

*The only way to use 'JUDGE' is when you use it against someone or talk about what does judge do when you sing or dance etc.....*

*'JUDGE' often have two meaning of it as adjective vocabulary, one is positive, and another one is negative, for example, "judge objectively" or "judge harshly". There are totally different meaning in a sentence. Therefore the meaning of 'JUDGE' usually should see the situation in the sentence or conversation.*

*'JUDGE' usually comes in where something needs to be discussed between top people in that certain area. It's where they discuss whether to do that choice that's been give or something that is between laws*

The students' responses here strongly suggest that the module as a whole had failed in raising students' awareness of the language involved in making judgements and on the function of *judge* as a cognitive verb within their own writing practice. Only one student mentioned that to judge was "to form an opinion or conclusion of your own about something or someone", in keeping with the intended learning outcome. Thus, the continued focus on *judge* as a discrete target language item for corpus consultation was not in constructive alignment with the said learning outcome and resulted in most of the students failing to appreciate how corpora could be used to achieve it.

#### 4.2. Group interviews

Students in both groups were then invited to complete the remainder of the online modules in the same vein. Following a term break and a subsequent COVID lockdown resulting in a significant gap between the DDL treatment and what came next, the students were interviewed as a whole class (due to time constraints) about their experiences. They were first asked whether they were still using corpora – for any reason, to which no-one replied. In this excerpt, despite some students previously commenting on the usefulness of SKELL, students here commented they preferred Google for investigating language.

**Interviewer** 01:46: *So can you explain why you're not using the corpus tools? Are you using something else?*

**Participant A<sup>2</sup>** 01:53: *hmm Google.*

**Interviewer** 01:54: *Going back to Google?*

**All participants** 01:55: *Yes*

**Interviewer** 01:56: *Okay, that's perfectly fine. So, what has influenced your decision to use Google over SKELL? For example?*

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<sup>2</sup> Participant numbers were not assigned at the time. In the case where multiple participants come into an extract, we have labelled them A, B, C as they enter each extract

**Participant A** 02:06: *To research something right there, but in SKELL you have to search it up and then catch up with what you want to say.*

**Interviewer** 02:30: *Okay. I understand that we had long holidays, and then lock downs. And that's probably contributed to the kind of lack of use. And there any other reasons for dropping the use of SKELL?*

**Participant B** 02:47: *I just want to agree with her that it's like, just easier to like, just type something into Google rather than going to a website like SKELL.*

**Interviewer** 02:58: *Okay, so what's the difference then, in using Google versus using SKELL? Because for both you type something in, and you get something back? Right. So, what is better about what you're getting back from Google, compared to what you're getting back from SKELL? What's the advantages of that?*

**Participant C** 03:19: *Just because it's simple.*

**Interviewer** 03:20: *It's simple. How is it more simple?*

**Participant D** 03:23: *Like, for example, like when you, like search a word like in SKELL, it comes up with like a little background information for that word. And I, yeah, like how to use the word. But like, whereas in Google, like you simply search up the definition, which is easier. Like, it's complex, but it's simple at the same time.*

The underlined segments in this passage highlight how the EAL/D students were, at this point, not able to determine how corpus consultation could help them constructively arrive at the meaning or function of the cognitive verbs targeted in the learning materials – the very kind of constructivist learning in which DDL is purported to result. While this was not an outright rejection of DDL, the students stated they felt more comfortable with the explicit definitions of cognitive verbs offered by Google.

Similarly, other students also commented in the excerpt below on how the use of machine translation software was also still advantageous over corpus consultation in arriving at the meaning of the target language items.

**Interviewer** 04:10: *So, I mean, you're happy using Google, but is Google solving all of the problems that you're having with your writing?*

**All participants** 04:55: *No.*

**Interviewer** 04:55: *Seems like no. So, then the question would be what more do you need? To help you, or maybe you don't have an idea about that right now, but what would you like to see? What kind of application would you like to use? Yes.*

**Participant A** 05:10: *Because about the language thing sometime like before we translate sentences, and it's like those SKELL websites probably won't translate, like, like a whole full sentence into like, a definition that we can understand. That's why that's why it is like Google is more I useful to use.*

**Interviewer** 05:29 *Yeah, I remember the that you mentioned this last time about translation. So, is the translation, when you use some translation software, for example? Is that giving you everything that you need? Or are you still having trouble? With your writing, when it comes to translating things.*

**Participant A** 05:46: *The translating is not giving you what everything you need, but it's like giving that understanding to you like, what if this sentence is meaning,*

The main disappointment here is that, even though the focus of the DDL activities was erroneously on the discrete meaning and usage of the cognitive verbs themselves rather

than understanding how to achieve their function, students *still* felt more comfortable using machine translation over DDL at arriving at this discrete understanding. This suggests that DDL had failed in both its intended and unintended goals. This failure is emphasised again in the following extract, where the students outlined the issues that they had with the complexity of the suite of DDL tools trialled in the learning materials, and explained what they would like to see in future tools.

**Participant A** 07:45: *So, in my opinion, Google was like, they give us answers of most used or like common words from all the people. But the websites, like the tools that you gave us is more academic writing used. Google is like, in general, more easier to find the results and stuff. So, if I think if the tool is like, make it easier and less steps, it would be more useful in Google definitely.*

**Interviewer** 08:15: *It's a very common thing that people say after using these tools. It's there's so many steps involved. And we realise that we need new tools that address this problem. So I'm trying to get some money from the university to build this tool, which is then that makes this interview a really good opportunity to ask what you would like to see in that tool. So, now that you've been using the tools for a while or not using them, I suppose. If you could have a new tool, what would you like to see in that tool? Do you have any suggestions at all? And just put your hand up, I'll come over to you. Something that is going to solve your problems with your writing. Yes.*

**Participant B** 09:10: *In like online dictionary we saw the definition and why the way we can use it. And for Grammarly writing essay, we can use the way to like gather analyse of the essay.*

**Interviewer** 09:27: *So some automatic analysis of essays, online dictionaries, translation dictionaries or these like English to English dictionaries that you use.*

**Participant C** 09:38: *English to English would be better.*

**Interviewer** 09:40: *Which dictionary do you currently use?*

**Participant C** 09:42: *I currently use Chinese to English.*

**Interviewer** 09:45: *Chinese to English so you're translating as well?*

**Participant C** 09:48: *Yeah.*

**Interviewer** 09:48: *Okay. So, the tool should at least have some kind of translation component as one, but maybe not the only bit of information that you're getting.*

**Participant D** 09:58: *Yeah, I can try. Maybe use multiple foreign languages to it. Yeah.*

**Interviewer** 10:03: *Okay, so some translation elements. Anybody else? What suggestions might have? If you were going to have a new tool just for you? What would you like to see in it? Yes.*

**Participant B** 10:18: *The definition the examples are similar, meaning basically.*

**Interviewer** 10:22: *Okay. With the different with the definitions. Sorry. Yeah. With the definitions. Do you mean like a dictionary definition? Is that what you mean?*

**Participant C** 10:34: *Maybe. Yeah.*

**Interviewer** 10:37: *When you check a dictionary now? Did the definitions always make sense?*

**Participant C** 10:42: No, not really.

**Interviewer** 10:45: *So, what would help with that?*

**Participant C** 10:47: Maybe like a definition where we understand like it is more simple.

The underlined passages reveal that the functions students would like to see in future DDL tools were machine translation, (simple) dictionary-like definitions, and Grammarly-like automated writing feedback/evaluation – so, essentially, a complete rejection of the concordancing, pattern-finding and inductive learning approaches covered during the DDL training.

#### 4.3. Students' written production

Immediately following the student interviews, it was agreed with the teachers that another approach was required to bring the students back on board, namely, to use corpus tools to help with the revision of students' written work for other subject-content classes. The linguist's role was to provide written corrective feedback (in the form of coloured highlights) on students' written submissions outlining areas of vocabulary and phraseology that were amenable to revision through corpus consultation, as shown in the extract in Figure 4 taken from a students' essay on Harper Lee's *To Kill a Mockingbird*. Note that not all errors are highlighted, only those more deemed amenable to corpus resolution based on the researcher's perception of student's corpus literacy and language skills.

**Figure 4.**

*Written corrective feedback on student's submission*

The author shows the symbolism of Arthur Boo Radley as a important part in this novel which set his identity and connection to the main symbol 'mockingbird'. A quiet, kind-hearted boy **grew up under the attack of all kinds of gossip** and was regarded as 'devil' and 'ghost'. 'Malevolent phantom' **as a other symbol to him**,

'To kill the mockingbird' is terrific novel written by Harper Lee which privileges the idea to the readers, courage is important when **facing the fear**. This novel is a hard-hitting realistic look at racism as it was shown in the fictitious community of Maycomb of Southern American during 1930s. Courage is represented through the characters Atticus Finch and Arthur Radley who both overcome fears to grow and change to the person they want to be. Their inner fears becomes their courage when they facing their fears. Harper Lee invites readers to understand the courage **is significant in our life**, also the author **using many of writing techniques** to demonstrates it.

General guiding feedback and instructions were also provided for all students about how to use corpora to proceed with revisions to the highlighted passages shown in Figure 4 above, as follows:

Hi [student name]!

*Overall, your writing is good! However, we can see a number of phrases that need work. These have been highlighted in yellow. In some cases, one or more words are wrong, in some cases the words don't go together well, and in other cases some words are missing or unnecessary.*

*Luckily, many of these phrases can be revised using corpus software, because translation websites or Google will probably not be able to provide the correct answer (in fact, this is probably how some of these errors have appeared in the first place). However, you are free to try to make revisions using whatever tool you like.*



Students then revised the highlighted passages using either corpus tools, Google, translation software or dictionaries, indicating through colour coding the specific tool they had used (if any). Following this process, an extra round of feedback was provided on the appropriateness of the revisions made, and whether any extra revisions were required. If the latter, sample corpus queries were generated in Linggle and the URL was copied into comments for the students' information. Figure 5 shows this step in action, with the pink highlighting indicating a students' revision using Linggle, green indicating revision with an online dictionary, light blue indicating revision with translation software, and the researchers' comments on specific student revisions shown using MS Word comments.

**Figure 5.**

*Student corpus assisted revisions and instructor feedback in comments*

**EXAMPLE 1: Classwork to write an analytical response - 'To Kill a Mockingbird' (Term 3)**

The author shows the symbolism of Arthur Boo Radley as a important part in this novel which set his identity and connection to the main symbol 'mockingbird'. A quiet, kind-hearted boy grew up under the attack of all kinds of gossip (grew up with attack of all kinds of gossip) and was regarded as 'devil' and 'ghost'. 'Malevolent phantom' as a other symbol to him (is another symbol to him)

'To kill the mockingbird' is terrific novel written by Harper Lee which privileges the idea to the readers, courage is important when facing the fear (facing fears). This novel is a hard-hitting realistic look at racism as it was shown in the fictitious community of Maycomb of Southern American during 1930s. Courage is represented through the characters Atticus Finch and Arthur Radley who both overcome fears to grow and change to the person they want to be. Their inner fears becomes their courage when they facing their fears. Harper Lee invites readers to understand the courage is significant in our life (as a significant part in our life), also the author using many of writing techniques (using many writing techniques) to demonstrates it.

Instructing students to use corpora to help with revisions for in-class subject-content writing assignments might be seen as having considerably improved the constructive alignment of corpus technology, specified learning outcomes, and assessment compared with the failed focus on cognitive verbs reported earlier. Evidence for this was found in discussion with the EAL/D teachers, who mentioned positive student engagement with corpus software in their EAL/D lessons directly arising from this first round of corpus-assisted revisions. Anecdotally, one student was heard to ask in the classroom "when do we use the corpus?", and another student identified as previously reliant on translation software for any language-related issue was found by the EAL/D teachers to be using Linggle for subsequent writing tasks.

Following the first round of corpus-assisted revisions, a second round was conducted two weeks later. However, at this point, COVID-related disruption to lesson activities occurred again, and approximately half of the students failed to submit a first draft for written corrective feedback. Of these, only half again returned their written submissions following the provision of feedback. At this point, time had run out in the final term of the year for further writing assignments, and the decision was made to pause any future DDL activity until the following year.

## 5. Discussion and conclusion

Leaving aside any discussion of whether the EAL/D students' final non-participation with corpus-assisted writing revision was due to COVID or not, the initial lack of constructive alignment between DDL activity, learning outcome and assessment has seriously limited the immediate and lasting impact of the overall DDL intervention, both qualitatively and quantitatively. Crucially, the decision to replicate corpus-based activities aligned to address the learning outcomes and assessments of one cohort for those of another cohort can be identified as the source of failure to achieve constructive alignment, leading to the complete failure of engaging the EAL/D cohort with DDL pedagogy. By the time steps were taken to re-align the use of corpora and DDL with learning outcomes and



assessments focusing on corpus-assisted writing revision, it was likely already too late – the damage had been done.

When DDL works, the results are usually plain to see, empirical learning gains in some aspect of linguistic knowledge and/or production, successful revisions on L2 writing, and positive qualitative feedback from teachers and students. A number of DDL studies do exist that show no positive effect of concordancing from an experimental design perspective (Ballance, 2017), with these failures are often prescribed instead to issues including corpus tool complexity (e.g., Boulton, 2010), proficiency in the L2 (e.g., Lay & Yavuz, 2020), and a lack of pedagogic processing of corpus data (e.g., Pérez-Paredes, 2019b). However, while Meunier (2019a, 2019b) has already warned of the dangers of not achieving constructive alignment for DDL, very few studies have revealed the results of failed DDL interventions arising from said lack of alignment. Despite the latest, user-friendly corpus tools, a selection of corpora considered generally amenable to consultation by secondary-school learners, a dedicated online learning platform hosting interactive DDL activities with numerous opportunities for corpus consultation and reflection, and the support of an experienced DDL practitioner, the significance of the failure outlined in the present study could only be defined as catastrophic. Even in studies reporting no actual learning gains, at least positive perceptions of corpora are often reported (e.g., Sun & Hu, 2020). That was not the case here following the first treatment stage.

What are the lessons to be learned? It is apparent that achieving constructive alignment between DDL, learning outcomes and assessment is critical to the whole intervention, and failure to do so risks dooming the whole enterprise before it begins. While constructive alignment in this study was initially present in terms of the agreements made between the researchers and the teachers on the target language foci and proposed pedagogical approach, this was not carefully managed across the lifespan of the intervention, leading to its eventual failure. This underscores the importance of a clear and shared understanding of the instructional goals and objectives between researchers and teachers as well as the need for a continued, collaborative effort to ensure that these goals are being met. It is important to ensure that teachers (and researchers, although we only have ourselves to blame here) are given sufficient time to plan and prepare for the intervention as well as to reflect on their practice and make necessary adjustments. DDL researchers need to carefully consider the context in which any DDL intervention is taking place. As seen in this study, different contexts, even within the same school, may require different approaches considering the specific needs of the learners and the environment in which they are learning. It is also important to recognise that DDL interventions are complex endeavours that require careful planning and implementation as well as ongoing monitoring and evaluation in order to ensure that they remain effective over time. As such, it is essential to ensure that all stakeholders involved in the process are aware of their roles and responsibilities, and that they are provided with the necessary resources and support to ensure a successful outcome.

Another crucial aspect to consider is that constructive alignment is a form of backward design. This approach necessitates a clear identification of learning outcomes, followed by the determination of assessment methods, before designing learning activities (i.e. the DDL tasks in this study). Richards (2013) very clearly presents the differences between forward, central, and backward design. Unfortunately, in many cases, DDL tasks are conceived under a forward design paradigm, where learning activities precede the consideration of assessments, and where alignment with learning outcomes is an afterthought. This tendency may stem from a linguistic-centric focus common among DDL researchers. Drawing on elements outlined in Richards (2013, p. 30), such designs typically view syllabi as language-centred, teachers as enforcers of correct language usage, and learners as striving for precise language mastery through rule understanding and application. Assessment in these designs is often norm-referenced. In contrast, backward designs, favoured by contemporary educators, adopt a needs-based approach, prioritizing real-life like contexts and applications, and gradual mastery of situated language use. Here, teachers are seen as facilitators of learning experiences, and assessment tends to be criterion-referenced and improvement-oriented. These rather dichotomous approaches (DDL researchers proposing forward design learning tasks versus educators expecting backward design tasks) probably account for a large

proportion of the difficulties and misunderstandings that take place when the two communities engage in collaboration. Whilst each community has good intentions and tries to find convergences, they may end up stumbling on divergences.

Finally, the publication of non-significant or negative results is not only beneficial for the scientific community but also for any stakeholder involved in future DDL interventions. By providing a more complete picture of the research process, stakeholders can gain a better understanding of the complexities and challenges that researchers, teachers and students face and be better prepared for overcoming these issues in time for their own forays into DDL.

To conclude, the present study emphasises the crucial role of constructive alignment between learning outcomes, DDL tasks and assessment in the success — or failure — of DDL interventions. It also underscores the need for teachers and researchers to reach consensus on learning designs and expectations before any intervention begins. We hope that this study not only serves as a valuable cautionary tale about the risks of inadequate alignment but also provides an impetus for deeper collaboration between teachers and researchers to refine and strengthen future DDL initiatives.

### **Ethical statement**

This study was approved by the IRB board of the University of Queensland, adhering to the National Statement on Ethical Conduct in Human Research in Australia.

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