



# Game based language learning for Irish: noticing errors while playing

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**Abstract.** Game Based Language Learning (GBLL) is an approach to language learning in which learning happens in the process of playing a game. GBLL has several potential benefits including enhanced reading, writing, and cultural awareness. This paper provides a brief overview of CIPHER – Faoi Gheasa, a GBLL app for Irish and learners’ feedback on the game. The app inverts the current Intelligent Computer Assisted Language Learning (ICALL) approach to error detection and it asks players (learners) to spot the deliberate errors (ciphers) in texts that have been changed by an evil character called Sypher. Many elements of game playing are included in the app. It has been played by over 150 primary school learners of Irish. While there is still room for improvement, the overall feedback from the students was very positive.

**Keywords:** ICALL, less commonly taught languages, LCTLs, natural language processing, Irish.

## 1. Introduction

Error diagnosis, feedback, and correction is one area of focus within ICALL research (Heift & Schulze, 2007; L’haire & Faltin, 2003). Learner corpora can provide valuable insights into the language learning process. Analysis of learner corpora can provide error statistics which can be used to create focused CALL resources (Granger, 2003). As is often the case, there are fewer learner corpora for Less Commonly Taught Languages (LCTLs). Often, teachers have to rely on their own experience, intuitions, and anecdotal evidence in terms of error frequency.

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Learner corpora are not always readily available to substantiate these teacher intuitions. What can CALL researchers do in this situation? One solution is to gather digital resources to build up learner corpora in LCTLs.

GBLL is an educational approach in which language learning activities happen in the context of a game and are enhanced by rich game mechanics (Liu, Wang, & Lee, 2021). GBLL can encourage reading and writing (Karadag, 2015) and also cultural awareness (Ćosović & Ramić-Brkić, 2020). If learners cannot recognise errors, their learning can become fossilised. It can also inhibit their ability to learn the correct form of vocabulary. GBLL is a useful strategy to motivate learners to read (more enjoyable) texts that they would not normally read and this can help them to acquire new vocabulary and idioms.

There are several challenges to teaching Irish in schools. It has a complex socio-cultural role in Irish society, teachers are not native speakers and from some perspectives it lacks utilitarian value. The orthography is not transparent and it is a morphologically complex language. Although there are some resources for Irish (e.g. Irish WordBricks, Purgina, Mozgovoy, & Ward, 2017, [abair.ie](http://abair.ie)), there is a lack of CALL resources for the language, which impacts on the potential to enjoy learning the language (see Ward, 2014).

Content is critical in any language learning situation. In some CALL apps, the issue of cultural heritage and hinterland is not really addressed – maybe because it is assumed to be understood by the learners. GBLL apps can be a platform for incorporating cultural awareness within the game environment. This paper provides an overview of a GBLL app that encourages learners to notice errors while playing a game.

## 2. Method

Cipher – Faoi Gheasa is a GBLL app for Irish. It centres around an evil character (Sypher) that tries to make Irish mythology and folklore texts indecipherable by deliberately ‘misspelling’ words in the text. The players have to read the text, locate the errors (spells) and find the common features of these errors. They get points for errors spotted and can ask for hints (which cost points) from game characters from Irish mythology. If they are low on points, they can write a sentence in Irish that relates to the story. The game is adaptive and the text level and the game difficulty will change based on the player’s ability. Figure 1 shows a screenshot of the Cipher – Faoi Gheasa game. For illustration purposes,

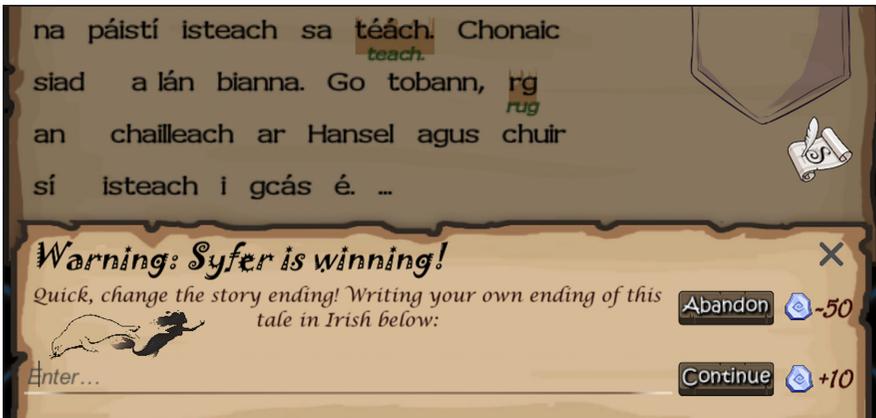
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the errors have been highlighted and the correct version of the word displayed underneath.

Figure 1. Cipher – Faoi Gheasa screenshot



Figure 2. Corpus collection element of Cipher



From a CALL perspective, there are two main aims, namely to gain insights into learners' knowledge of errors through their interaction with the game and to collect a (small) corpus of learner texts from the players. Our GBL approach inverts the traditional ICALL error detection model. Instead of the ICALL resource detecting

learners' errors, the CIPHER – Faoi Gheasa game gets the learner (player) to detect the errors. The CIPHER – Faoi Gheasa pipeline uses several natural language processing tools to create the game. It uses (semi)automatic text pre-processing tools to generate game texts. Figure 2 above shows the learner corpus collection element of CIPHER – Faoi Gheasa. The player is encouraged to write a sentence in Irish to finish off the story before the evil Sypher manages to delete the story forever. More details on the CIPHER – Faoi Gheasa game are available at Xu, Dhonnchadha, and Ward (2022a).

The CIPHER – Faoi Gheasa was initially pilot tested in an Irish-medium primary school and was subsequently tested in an English-medium school. There were nine classes who tested the app with over 150 participants. They ranged in age from nine to 12 years of age. Some of the students played the app in pairs due to logistical reasons and likewise, they filled out an online questionnaire in pairs. There were 64 responses in total.

### 3. Results and discussion

In terms of building a learner corpus, there were two questions: what would the players' level of Irish be and would they be able to write sentences that made sense? Unfortunately, their level was very low and the feature to check that only (reasonably) grammatically correct Irish sentences were entered had to be disabled; 39% of the texts were in Irish, but not relevant to the story, while only 16% were in Irish and relevant to the story. There is a need to enhance this aspect of the app in future versions.

In terms of the game itself, the feedback from students was very positive. It must be borne in mind that the students did not often have the opportunity to use laptops in class and the Hawthorne effect could be in play. Nevertheless, they reported that the game was fun (46%) while only 12% said it was boring, 65% said they thought the texts were at the right level of difficulty for them, and 19% thought they were easy or too easy, while 16% thought they were either hard or too hard. Only 9% thought that learning or reading Irish through the game was bad or very bad, with 18% saying it was OK, 29% saying it was good, and 44% saying it was very good. Table 1 shows a summary of the students' responses.

The learners' ability to write in Irish was limited. There were changes made to the game that would allow them to enter any sentence, regardless of its grammaticality. The learners will need more scaffolding in future to help them

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write relevant, grammatical sentences in Irish. See Xu et al. (2022b) for more details.

Table 1. Summary of student feedback

What did you think of the game?	Were the texts at the right level?	How would you compare learning or reading Irish through the game to normal classroom teaching
Fun (46%), challenging (24%), easy (16%), boring (12%), other (2%)	Too easy (9%), easy (10%), right level (65%), difficult (12%), too difficult (4%)	Very bad (7%), bad (2%), OK (18%), good (29%), very good (44%)

## 4. Conclusion

The GBLL approach was feasible, although some points need to be borne in mind. The learners enjoyed playing the game and they were enthusiastic about it. They even discussed Irish in pairs, something which the teachers mentioned was very rare. The teachers were happy with the game and how their students played with it. There are future improvements planned and research will continue into this novel approach to noticing within a GBLL framework.

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