

Learner Autonomy and Playful Learning: Students' Experience of a Gamified Application for French as a Foreign Language

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[*Abstract*] Learner autonomy is a central theme in foreign language learning (FLL) research and is encouraged by the Common European Framework of Reference for Languages. In Norway, the national curriculum for foreign languages also emphasises the importance of taking charge of one's own learning. Games and gamification are perceived as ways to foster and develop learner autonomy in FLL classes. However, only a few studies have researched these assumptions in practice. The present study investigates the emergence of learner autonomy in relation to the use of a gamified application for a French-as-a-foreign-language course. The application was developed and implemented for a whole school year in a second-year class of a Norwegian upper secondary school. Interview data, the data log and observation data were collected to analyse the students' use of the application in practice. The study shows that the application supports the emergence of learner autonomy. The students take control of the learning activity and create their own learning paths. These results are promising for the use of gamification in FLL contexts. The structure of the gamified application provides a frame within which students could develop their learner autonomy and participate in the collaborative dimension of learning.

[*Keywords*] Learner Autonomy, Playful Learning, Gamification, Foreign Language Learning

[*French title*] Autonomie et Apprentissage Ludique : l'expérience des apprenants de l'utilisation d'une application ludicisée pour le français langue étrangère

[*French Abstract*] L'autonomie de l'apprenant est un thème central de la recherche sur l'apprentissage des langues étrangères et est encouragée par le Cadre Commun Européen de Référence pour les langues. En Norvège le curriculum national pour les langues étrangères souligne l'importance de la prise en charge de son propre apprentissage, une composante essentielle du concept d'autonomie. Les jeux et la ludicisation (gamification) sont souvent présentés comme une manière de favoriser le développement de l'autonomie de l'apprenant dans les classes de langues étrangères. Cependant très peu d'articles se consacrent à l'analyse de ces hypothèses dans un contexte d'enseignement. La recherche présentée dans cet article examine l'émergence de l'autonomie en relation avec l'utilisation d'une application numérique ludique pour le français langue étrangère. L'application a été développée et utilisée pendant une année scolaire dans une classe de première d'un lycée norvégien. Des interviews, les données de l'application et des observations ethnographiques ont été collectées pour analyser l'utilisation de l'application par les apprenants en pratique. Les résultats de ces recherches montrent que l'application a favorisé l'émergence de l'autonomie. Les apprenants ont pris en charge leurs activités langagières et ont créé leurs propres expériences d'apprentissage. Ces résultats sont prometteurs pour l'utilisation de la ludicisation (gamification) dans les contextes d'apprentissage des langues étrangères. La structure de l'application ludique a fourni un cadre dans lequel les étudiants ont pu développer leur autonomie et participer à la dimension collective de l'apprentissage.

[*French Keywords*] Autonomie de l'apprenant, Apprentissage ludique, Gamification, Apprentissage des langues étrangères

1. Introduction

“For many language teachers, autonomy is a good idea in theory, but somewhat idealistic in practice” (Benson, 2011: 119).

Learner autonomy is a central theme in foreign language learning (FLL) research literature. However, as indicated in the preceding quote, a divide exists between theory and practice on the subject. Recent educational paradigms and school curricula encourage a pedagogy for autonomy (Council of Europe, 2001 ; K06, 2006). Many researchers have promoted its development (Benson, 2011 ; Dam, 2011 ; Dickinson, 1995 ; Little, 2007 ; Miliander & Trebbi, 2008 ; Trebbi, 2011), but few have researched its practice. It has been suggested that gamified resources, based on game principles but adapted to the educational setting, could be ways of fostering more autonomy in a language class by giving students more choice and agency (Sykes & Reinhardt, 2012).

This article investigates the relation between gamification and autonomous language learning. More particularly, it explores the following research question:

Did the gamified application support students' emergence of learner autonomy and if so, in what ways?

In order to do so, this study looks at a gamified web-based application developed for a French-as-a-foreign-language, upper secondary class in Norway. It first examines how learner autonomy was operationalised in the design of the application. One of the main design principles was to support the development of learner autonomy through a gamified structure. Next, this study investigates how the students used the application in the classroom. The research interest lies in studying how their experience relates to the design principles for learner autonomy. The study uses the data log from the application, interview data and observation data from a yearlong research project to explore the relation between gamification and learner autonomy.

2. Background: from differentiated learning to autonomy

Differentiation and learner autonomy have been central in more recent educational paradigms and policy documents. The Common European Framework of Reference for Languages sets learner autonomy as one of the main goals of the action-oriented approach (AOA). This

approach seeks the formation of a critical and autonomous learner (Rosen, 2010: 492). It also advocates a more learner-centred pedagogy (Council of Europe, 2001).

In Norway, differentiation was introduced in the national curriculum in the 1970s, but instead of being interpreted as differentiated teaching, it was understood as learner autonomy (Trebbi, 2011). If more recent documents, for example the Norwegian school reform of 2006 and the national curriculum for foreign languages, do not refer directly to learner autonomy (K06, 2006 ; Utdanningsdirektoratet, 2006), they both emphasise one major component of autonomy – taking responsibility for one’s own learning (Trebbi, 2011).

Differentiated learning first took a central place in foreign language literature in the 1970s and the 1980s. It appeared as a reaction to the fact that “teaching tended to aim at the middle (however pupils were grouped) rather than seek to accommodate successfully a broad range of attainment and prior experience” (Hart, 2005: 11). Differentiation is commonly defined as an instructional technique to include all students and give them the opportunity to work on tasks suited to their levels and abilities (Chapman & Gregory, 2002 ; Hart, 2005). Teachers can differentiate among multiple aspects of a lesson, including content, assessment tools, performance tasks and instructional strategies (Chapman & Gregory, 2002).

According to Puren (2001: 1), in a differentiated pedagogy, “students, individually or in groups, are working at a given time on different tasks”, but the teacher is still directing the learning by assigning different tasks to different students. This means that in a differentiated pedagogy, the control remains mainly in the hands of the teacher who decides what individual students will work on. In contrast, learner autonomy, traditionally defined as “the ability to take charge of one’s own learning” (Holec, 1979: 3), implies that learners become the agents of their learning and control their own learning paths. Tasks are not instruction driven any more but student driven. Benson (2011) describes three different areas of control that are available to an autonomous learner, consisting of learning management, cognitive processes and learning content.

In their respective definitions, Holec (1979) and Benson (2011) tend to consider autonomy as an individual capacity or ability of the learner, setting aside the social aspects of being a learner in a language class. Others have advocated a more social definition of learner autonomy, where students are being autonomous in relation to others, in the interplay of social interaction (Kohonen, 2010 ; Lewis, 2014 ; Little, 1991 ; Murray, 2014). In a more recent paper, Huang and Benson (2013) acknowledge the social aspects of autonomy and redefine the concept of control as ‘having the power to make choices and decisions and acting on them’ (p. 9). The inclusion of the concept of choice, instead of control, agrees with a more

social definition of the concept of learner autonomy where learners are not taken in isolation but as members of a social context (Murray, 2014). Understanding learner autonomy as “a construct developing through interdependence and collaboration in the social setting of the language classroom” (Murray, 2014: 6) contributes to avoiding the misconception of autonomous learning as being individualist and emphasises the importance of peers and teachers. A similar approach is taken in the AOA and will be briefly reviewed in the next section.

3. Learner autonomy in the action-oriented approach: a sociocultural perspective

Autonomy in FLL, especially in the AOA, does not mean leaving students to themselves. It implies a certain structure in which students can act and take control of their own learning. In the same way, this understanding of autonomy does not exclude the collaborative dimension of learning (Rosen, 2010). Co-learning is a central principle of the AOA and of its sociocultural background. With this approach, learners are expected to work collaboratively to perform complex tasks with others. Each learner brings his or her own skills and knowledge to construct an understanding with his or her peers. This co-construction of knowledge or co-learning is situated in interaction and through dialogue.

In the AOA, learner autonomy is regarded as a way to empower learners and develop their ability to participate in collaborative action. An autonomous learner will be able to adapt to any type of situation and in this way, become a responsible and supportive citizen (Council of Europe, 2001). However, to develop learner autonomy, students first need to be aware of the possibility of making choices and decisions. The structure of the learning activity has to open a situational frame with the potential for enhanced learner autonomy. Teachers play a central role as guides, not only advising students but also giving them the necessary space to control their own learning. This new role of the teacher is quite decisive in changing learners' attitude towards greater autonomy.

4. Review: autonomy, technology and games in foreign language learning

Recent literature has identified autonomy as beneficial to language learning (Benson, 2011 ; Dam, 2011 ; Dickinson, 1995) and even crucial (Little, 2007 ; Menezes, 2008 ; Oxford, 2015).

Benson (2011: 146) suggests that technology-based approaches could be ways of supporting the development of learner autonomy as they are “designed to give learners individual control over the pace of learning”. These approaches place the learner, as the user of the technological device, in direct control of key aspects of the learning process; students can take responsibility for their learning and can make their own choices (Benson, 2011: 149). In a technology-based approach, Benson (2011) examines playful language activities, such as WebQuest or LanguageQuest, and suggests that they can provide opportunities for learners to carry out largely self-directed tasks using authentic information that would not be readily available without web technology. As in the AOA, learners are perceived as social agents who use a foreign language as a communicative tool to undertake various types of tasks, whether language focused or not (Villanueva, 2009). Koenraad (2005: 12) develops this idea further by setting as a goal for LanguageQuest that tasks should be designed to help students become autonomous.

It is suggested that playful activities and games can be linked to the development of autonomous work as they give control to the learner (Silva, 2008 ; Sykes & Reinhardt, 2012). Unlike in school where “learners are often unaware of the goals of a particular task, nor do they have much agency in choosing which tasks to complete” (Sykes & Reinhardt, 2012: 15), games are built so that the player would feel sufficiently in control and would want to continue playing. Sykes and Reinhardt (2012: 107) advocate a better balance between learner-driven and instruction-driven uses of tasks: “task choices are predetermined by the game designer but are authenticated by the player through perceived agency”.

However, the ideas developed above have not been empirically tested. In order to study these assumptions the review will now turn to empirical studies from related fields.

Dam and Legenhausen (1996) have examined three English-language classes in their comparative study on autonomous learning in Denmark and Germany, comprising two traditional classes using textbooks and a class promoting autonomous learning. They find that the autonomous approach makes students more aware of the English language surrounding them and helps them integrate this knowledge into their developing second-language (L2) competence. Autonomous learning is also effective, for Dam’s learners, in terms of vocabulary acquisition, which is a conventional indicator of successful language learning, according to the authors.

In her studies on gamers’ incidental learning of foreign languages through gaming and participation in gamers’ communities on the Internet, Chik (2014) finds that gamers actively choose to learn a foreign language, sometimes with the help of online communities. The

findings suggest that not only “gamers, in general, [are] aware that gaming and related activities could be utilized as learning resources” (Chik, 2014: 39), but they also choose specific games to use as language learning means. In other words, they combine leisure and learning experiences and thus take control of their FLL.

More interestingly, in their very recent study of a gamified language learning platform, Zourou et al. (2017) identified the role of gaming, and of social networking, in the development of learner autonomy. They showed for example that users of the platform had been generally engaged in providing feedback and revisions to each other, even though this feature of the platform is in no way compulsory (p.161). They argue that the learning platform encouraged a vision of learning as being both beneficial for the individual and for the group, revealing what they call a social autonomy stance (p.162). This shift between individual and group perspective is particularly interesting in showing the complexity of the concept of autonomy.

The importance of peer interactions for the development of autonomy is also brought forward in Pellerin’s (2017) recent study of Mobile Assisted Language Learning (MALL). In her chapter, she looked at different mobile applications used by young learners in French immersion classes. Her analyses reveal that the interactions between peers and between teachers and learners are crucial in developing autonomy. Pellerin (2017: 100) also found that students would develop a sense of autonomy when they were responsible for choosing the applications, functions or tools used in their learning. In her study, students experimented with the language; they took risks and developed a sense of competency through interaction with the applications’ interfaces and through scaffolding with the teacher.

This review shows a positive relation between the use of games or GBL and the development of learner autonomy and between learner autonomy and FLL. It presents some interesting findings on the relation between a learning application or platform and the emergence of learner autonomy. This review also shows that the empirical studies looking specifically at gamification and learner autonomy in a FLL context are few, highlighting the importance of bringing more research contributions to the field, as for example this research study.

5. Design

From a sociocultural perspective, tools and technology play a central role as mediational tools in learning activities (Wertsch, 1991). They are not replacing the communication between

learners or teachers, where meaning is negotiated, but are “providing resource[s] for supporting it” (Säljö, 1999: 159). Developing a tool or an artefact for FLL means creating *meaning potentials* for FLL. In other words, the tool should aim at supporting practices that are conducive to learning (Säljö, 1999). One of the main design principles of the application presented in this study is creating opportunities for the development of learner autonomy through specific design choices (see section 5.2).

The application was developed in collaboration with *EngageLab* (nd) of the University of Oslo as part of the author’s doctoral thesis. A team composed of designers and the author of this article worked on its design within a research-driven model. Teachers joined the development process as co-designers and in particular participated in creating pedagogical content for the application. A series of paper prototypes, pre-tests and design iterations lead to the development of a final prototype that is presented in this section. After the description of the application and its instructional design; this section discusses how learner autonomy has been operationalised in the design.

5.1. Description of the application

The application developed is an additional class resource for the language teacher. It is not meant to be used during the whole teaching time but as one activity among others that the teacher normally undertakes during his or her class. For this research project, the application was used in a French-as-a-foreign-language class in a Norwegian upper secondary school. The application could be perceived as a shell that could be filled with different types of contents. In this project, the contents developed were linked to the French class and followed the requirements of the Norwegian national curriculum for foreign languages (K06, 2006 ; Utdanningsdirektoratet, 2006).

The web-based application is simply opened through a web browser and from an array of devices, including mobile phones, tablets and computers. Students connect individually to the application by using their Facebook IDs. Their profile photos and names are displayed on the application. The students belong to a specific group or team selected beforehand. In this project, the class was divided into 4 teams, with 3 to 4 students each.

The application offers multiple tasks to the students. The tasks are divided into two categories: *Quête* (Quest) and *Check-in* (see Figure 1). The quest tasks are solved collaboratively by teams of students. Based on the curriculum, each quest involves a different topic or competence. The application includes seven quests (see Table 1), each quest divided

into several levels and each level comprising several tasks. Completing one whole level automatically unlocks the next. Completing a full quest unlocks a new quest.

Table 1 – Overview of the quests.

Quest	Title	Topic
1	<i>Blog</i>	This quest's final goal is for students to write an article on a topic of their choice. Sub-goals guide the students through the process of writing an article, including finding information, reflecting on the text structure, and so on.
2	<i>Parlons français!</i>	In this quest, students review basic communication skills in French. Its final goal is to prepare the students for their trip to France.
3	<i>Francophonie</i>	In this quest, students select a Francophone country, discover information about it and share it with the other students. The final goal is to learn about Francophone countries.
4	<i>Voyage</i>	This quest is meant to be solved during the trip to France. Students encounter many different challenges linked to the basic communication skills reviewed in Quest 2. The final goal is to practise the language in an authentic situation.
5	<i>Journalisme</i>	Students select a current issue (social, environmental, etc.) and impersonate journalists reporting on it in whichever media they choose. The final goal is to learn how to present arguments and debate about ideas.
6	<i>Culture</i>	At each level of this quest, students explore a part of francophone culture, such as music, plastic arts and literature. For each domain, they select which artist or artwork they want to talk about. The final goal is to discover different areas of francophone culture.
7	<i>Cinéma</i>	Students select a francophone film and present it through different angles. At the last level, students act a sequence of the film. The final goal is to learn more about francophone cinema.

The unlocking system ensures that students in the beginning of the year are not overwhelmed by the quantity of possible pathways. The more they use the application, the more quests they will be able to access. Some examples of the tasks developed for the research project are as follows:

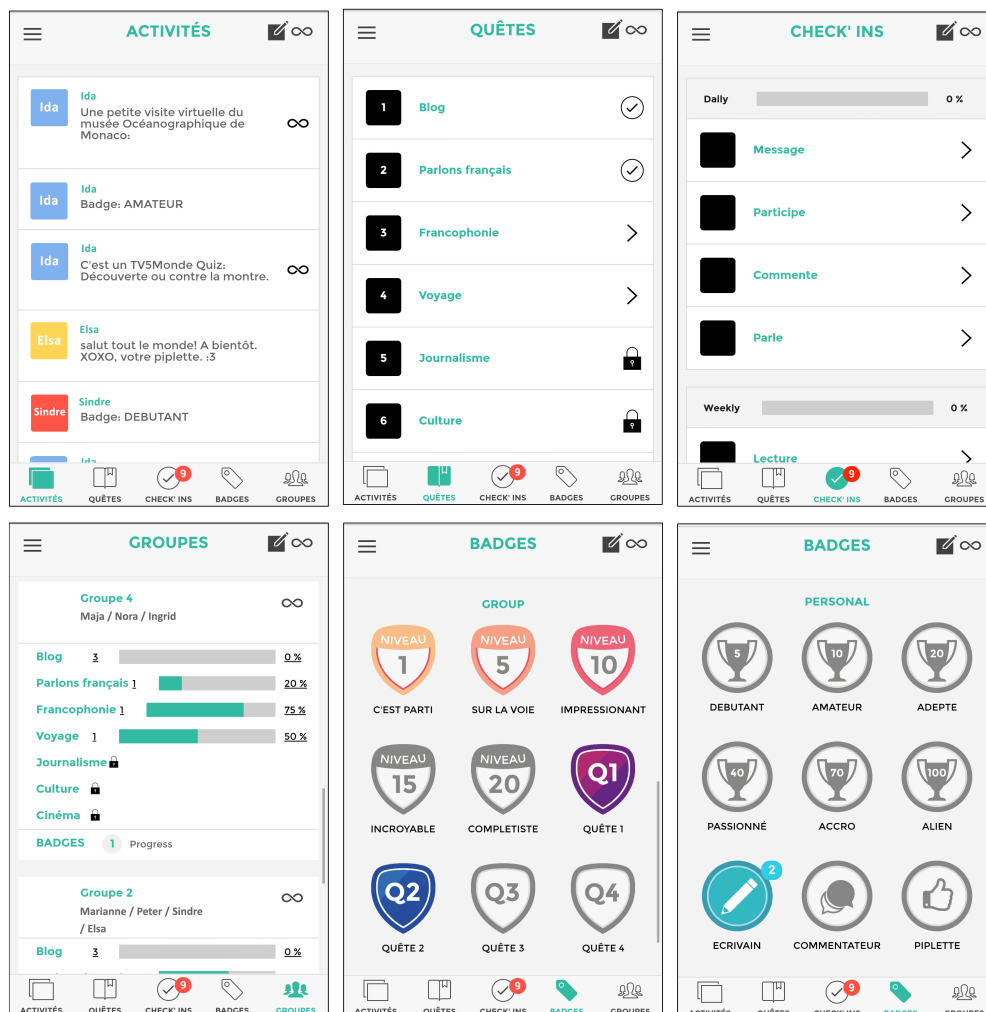
- Find connectors in an article (Quest 1 – Level 4).
- Present expressions that are useful in a café (Quest 2 – Level 2).
- Give your opinion on the topic you found (Quest 3 – Level 2).
- Introduce yourself orally (Quest 4 – Level 1).

- Interview other students or French speakers about the topic you selected (Quest 5 – Level 5).

The other category of tasks is called Check-in. These tasks are solved individually. They promote good habits for learning a foreign language and are meant to encourage the practice and the development of the four language competencies. Specifically, while performing these tasks, the students can listen to, read, write and speak the foreign language. Some examples of check-ins are as follows:

- Write a message in French on the application.
- Watch a film or a video in French.
- Participate in the class conversation.
- Present a book, film or topic on your blog.

Figure 1 – The different pages of the application.



The students solve the tasks outside of the application, post the results on their blogs if necessary and mark the tasks as completed on the application. Not all the tasks lead to a production; some are used to prepare for another task (e.g., searching for information, selecting a topic, etc.).

When completing tasks and quests, the students can earn two types of badges: automatic badges given by the application and teacher badges. The automatic badges are awarded when a student or a group has completed a certain amount of tasks or check-ins or has fully completed a quest. These badges are awarded independently of the task being solved properly, brilliantly or not at all, as long as it is marked as completed. To counter this mechanical way of receiving feedback, the teacher badges reward quality. The teacher gives these to students or groups who have performed quality work, for example, writing a good article, filming an interesting video, and so on.

In addition to receiving feedback in the form of badges, students can visually follow their progress, thanks to progress bars. On the group page, they can access a detailed summary of their current status in each quest and compare their progress to the other teams'. This last social aspect, being part of a class, is also found on the application's message board. Students can use this function to share links or simply to write short messages in the foreign language. The teacher can also comment and write messages. The message board and the teams' blogs offer the students different arenas to communicate in and about the foreign language.

5.2. Learner autonomy as a design principle

This section discusses a major design principle of the application – the development of learner autonomy. It focuses on how the concept of learner autonomy is operationalised in the design, particularly by offering more choices to learners. Inspired by game structures, increasing learners' choices allows a variety of experiences and leads to a more learner-centred approach that supports the development of learner autonomy (Sykes & Reinhardt, 2012: 17). The application offers a structure where students can make decisions at each step, as follows: Which task do I want to work on? Do I want to work on individual or collaborative tasks? How do I want to solve this task, with which media? Which topic do I want to work on? Giving learners the agency to decide which task to engage in is central in a game-based or game-enhanced approach (Sykes & Reinhardt, 2012).

5.2.1. Choice of working method

The two different types of tasks gave the students the choice between collaborative or individual work. It meant that during the same lesson, some students could work alone, while others worked in pairs; some students could even do both in the course of the same session. The interplay between individual and collaborative work has been identified as crucial in promoting the emergence of learner autonomy (Lewis, 2014). Giving students the choice of working method was essential in the design of the application. However, as one of the goals of the project was to encourage collaborative work, the set of quests was placed as the central element in the application. The quests offered a rich variety of tasks and choices of progression, so each group would be able to create its own learning path. The individual tasks (check-ins) were short and less flexible in comparison. The list of nine check-ins was kept identical throughout the school year.

5.2.2. Choice of task type

The students were free to choose which task they wanted to work on and when. No specific order was imposed, so some students might have been working on quest 1 while others were on quest 3 in the same session. The application's gamified structure with a system of locked items that needed to be unlocked limited the students' range of action by offering fewer tasks to choose from at first and more tasks once the learner became a more advanced user. Not only could the students choose among the different tasks from the unlocked quests, but they could also select in which way they wanted to perform the tasks. Many tasks were open-ended and could be solved by writing a text, filming a video, recording a podcast, taking pictures, making a quiz, and so on, according to the students' creativity and interest. The tasks could be performed by using different media and with varying depths or levels of quality. Some students might write shorter texts with simpler syntax, while others would write longer and more advanced compositions. To ensure that the students could perform the tasks in any way they wished, the application was designed as a simple task manager with an accompanying blog. The blog's open format could contain many different types of media and was not directly linked to the task and the level structure of the application. The students could post their productions at any time and in any format. They could also post additional productions or messages if they wished. On the application, they could mark tasks as completed and follow their progress.

5.2.3. Choice of topic

The tasks were kept open to various themes, according to the context analysis carried out during the design phase (classroom observations and design sessions with teachers). In the

teachers' feedback (and through them, their students' feedback), a recurring point was that the students felt more motivated to write when they could choose the topic themselves. The relevance of the tasks and their relation to life outside the classroom were also central ideas of the AOA, with the aim of developing engaged and autonomous learners. The pedagogical content was designed to give students the opportunity to select the topic they wanted to work on in some of the quests, while keeping them more guided in others. For example, quest 1 let them choose any theme of their interest, and in quest 3, they could select which Francophone country they wanted to study.

5.2.4. Choice of place and time

The application was always accessible, even outside the class hours. The students could choose to solve quest tasks or check-ins anytime during the week if they wanted. This possibility was kept open even though the application was expected to be mainly used in the classroom under the teacher's guidance. These expectations were linked to the initial context analysis, which revealed that although they participated in the class, the students would not always do their assigned homework or only do so partly.

6. Methodology

This study is part of a design-based research project investigating the experience of teachers and students using a gamified application in the context of the foreign language class. Several types of data (e.g. video recording, interview, data log from the application) were collected in a yearlong fieldwork study in order to provide a detailed overview of the participants' experience and of their use of the application.

6.1. Participants and classroom observation

The application described in the previous section was implemented for a whole school year from September 2014 to June 2015 in a French-as-a-foreign-language class in Norway. The class comprised second-year students of an upper secondary (VG2 in the Norwegian system) medium-sized school (around 700 students) in a suburb of Oslo and a teacher, hereafter referred to as Mari. The 13 students were around 16 years old at the time of the study, who had been studying French for three years. The French class consisted of four periods a week (three hours), of which at least one had been dedicated to the application.

6.2. Data collection and data types

In the present study, the data log from the application and the interview data involving the students have been primarily used in the analysis. Other data sources have a complementary status (see Table 2).

The observation data was collected in the form of field notes from August 2014 to May 2015. The same researcher was present in the classroom during 15 lessons – 3 before the application was introduced and 12 while the students were using the application. The researcher took notes of the different events and activities happening during the French class, the digital tools used by the teacher and the students and their sitting placements while using the application. Used in the analysis of this study, these field notes were additional data sources to contextualise and clarify other data sources (see Table 2 for an overview of data types).

Group interviews were conducted at the end of the school year in June 2015. The students were interviewed in their own teams by the researcher. Four interviews were held with a total of nine students (out of the 13 who participated in the project). The interviews were semi-directed (Brinkman & Kvale, 2015), and screenshots from the application were presented to the students to help them in their narration. The students were asked about their daily use of the application, their working habits in their teams and what they thought of the different functions of the resource. They were also invited to suggest improvements or new functions for a future iteration of the application. The interviews lasted from 27 to 53 minutes, depending on the group.

The teacher was also interviewed regularly throughout the school year. These short interviews were recorded after each fieldwork session and focused on what happened in the class while the students were using the application, as well as the teacher's experience of the project.

The data log from the application was also collected at the end of the school year. The data was automatically gathered by the application's server throughout the year. It consisted of timestamps on when a specific action was performed and by whom, for example, when a specific quest task was marked as completed by a team of students or when a specific check-in task was completed by a student. The raw JSON files were extracted from the database. They were then converted and sorted on a spreadsheet document and gave information on each group's and student's activity on the application.

Finally, the students' productions were collected from the teams' blogs. These artefacts consisted of blog articles containing texts, pictures, videos and quizzes, for example. An inventory of the types of media used was conducted on each of the four blogs to analyse their multimodality.

Table 2 – Overview of data types.

Data type	Amount	Status in study
Group interviews with the students	4 interviews (e.g., I.G1, I.G2) June 2015	Primary
Data log	September 2014–June 2015 Collected in June 2015	Primary
Field notes Video recording (Groups 1 and 2 for technical reasons)	15 sessions (e.g., V.G2D1) August 2014–May 2015	Secondary
Students' productions	89 blog posts posted throughout the year Collected in June 2015	Secondary
Interviews with the teacher	11 interviews (T1.1 to T1.11) September 2014–May 2015	Secondary

6.3. Analytical procedures: interview data

The students' interviews were transcribed and analysed by using the qualitative research analysis software Nvivo. Each interview was coded the first time by the researcher, following a data-driven process, which “implied that the researcher started out without codes and developed them through readings of the material” (Brinkman & Kvale, 2015: 228). The codes were created according to what the students were saying, the feelings they were expressing and specific expressions they were using. The coding nodes were then grouped under thirteen categories, three of which were selected for this study: *agency* (taking initiative), *differentiated learning* (for example the different tasks the students are working on) and *strategies* (the organisation of their work, for example more or less collaborative) (see Appendix 1 for a complete overview of the coding scheme). The strategies category was divided into three sub-categories – selecting, organising and completing – each referring to different steps in using the application and working on the quests (see Table 3). The analysis of the interview data revealed that the three categories selected were particularly interesting in showing how the students were using the application in relation to the potential emergence of learner autonomy, in other words in showing in which ways the gamified application was supporting the students' autonomous learning. Each category brings forth a different aspect of autonomous learning that could be expressed with the following questions: What types of strategies did the students use (strategies)? Did they take the initiative (agency)? Did they

have different learning paths (differentiated learning)? The quotes selected for this study were translated from Norwegian to English by the researcher.

Table 3 – Description of the coding scheme with examples.

Code	Description	Example of quote
Agency	Taking initiative, making choices on their own	“I really liked that it was very interactive and that we could decide on our own what we wanted to do” (Peter, I.G2).
Differentiated learning	Variations among groups, students, tasks or working methods	“It was quite free to do the tasks, so one group had done it in this way, and another group had done it in another way” (Erik, I.G1).
Strategies: <i>selecting</i>	How the students selected the tasks	“We chose [a task] from the categories that were there and from how far we had come” (Jan, I.G3).
Strategies: <i>organising</i>	How the students organised their work on the tasks (e.g., collaborative or individual work)	“We shared the tasks like you take a part of the task, you take the other and then afterwards, we put it together” (Ida, I.G3).
Strategies: <i>completing</i>	Completing a task, finishing something	“That’s what we were doing in the group, and we wanted to finish it” (Marianne, I.G2).

7. Results

7.1. Group overview

The data on the four groups’ activities on the application was automatically collected by the application throughout the year. Table 4 summarises the groups’ activities in the quests. It shows how many tasks each group performed in the different quests and which quests they unlocked.

Table 4 – Summary of quest tasks performed.

Name	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Total
Group 1	14	5	4	2				25
Group 2	9	5	14*	5		3		36
Group 3	12	3	12	7				34
Group 4	14	2	4	7				27

Legend: * = quest fully completed; grey cell = quest locked

As shown in Table 4, the four groups followed different paths in the application. They all started by accessing quest 1 only and unlocked quests 2 and 3 after completing the first level of quest 1. The teacher unlocked quest 4 for all groups before their class trip to France. The number of quests and the amount of tasks developed exceeded the time allotted to working with the application, which explained why the students mostly worked with quests 1 to 4. Quests 5, 6 and 7 were created to offer different pathways to groups that would manage to complete one of the first four quests. For example, quest 5 would be unlocked by completing quest 2, quest 6 by completing quest 3, and so on.

Table 5 presents a summary of the amount of check-in tasks performed by each student.

Table 5 – Summary of check-ins completed.

Group 1		Group 2		Group 3		Group 4	
Jonas	14	Sindre	40	Ida	52	Nora	0
Erik	8	Marianne	3	Jan	25	Maja	0
Sara	0	Elsa	2	Julie	19	Ingrid	0
		Peter	0				

A close observation of which quests the groups worked on would reveal that they made different decisions. They followed different learning paths in the application. This is also clear on Table 5; Group 4 for example decided to focus on the quests, hence the zero check-in tasks solved for Nora, Maja and Ingrid. In addition, Table 5 also shows that even in the same group, the students experienced the application differently. The following analysis examines three individual students who were particularly active on the application or in their respective groups: Sindre for group 2, Ida for group 3 and Nora for group 4. They each represent three different types of students’ use of the application revealed in the analysis of data. Sindre was selected as he was one of the students who were taking a more competitive approach to the tasks (see Cruaud (2016) for other examples of students being competitive in a friendly way). Ida represents the students that were the most active on the application and especially on the message board. Finally, Nora was selected to represent students that were taking a more collaborative approach to working with the application. A short presentation about each group introduces each student case.

7.2. Case 1: Sindre (Group 2)

Group 2 was composed of four students: Sindre, Marianne, Elsa and Peter. It was the only group that managed to unlock another quest; by completing quest 3, they unlocked quest 6. In the video data, group 2's members can be seen using different strategies to perform the tasks, working individually or in pairs. During the interviews, Sindre talked about their working methods and the strategies they used to organise their work on the tasks:

First, we find out which tasks we've been working on [during the previous session], so we're not taking the same task [...] then we start working on something that the others are not doing and maybe sometimes we are collaborating. (Sindre, I.G2)

Mari, the teacher, also described how group 2 was working on the gamified application:

It seems to me that they have found a good way of working together. Everyone is contributing in their own way. Sindre was drawing the image and taking care of the design, whereas Peter was on Google Translate to find a good slogan. All the students were using their own abilities. (Mari, T1.11)

During the period of observation before the application was introduced and in the teacher's feedback, Sindre did not appear very interested in the French class. He would answer when the teacher asked him a question, but he would not volunteer to answer otherwise, especially if he had to speak French. His competence in French was low. Surprisingly, the data log showed that Sindre did many individual tasks. He had the second highest amount of completed check-ins of the whole class. He also contrasted a lot with the other three members of his group, who completed 0, 2 and 3 tasks, respectively. The check-in tasks he completed varied, but the two he chose the most often were *regarde* (look at a video in French) and *participe* (take part in the class conversation). He started using the check-in function in November, when most students first gave it a try after the teacher reminded them of its existence. The start of the year had been busy with the preparation for the trip to France, and the students had mostly focused on the quests. Sindre kept doing the check-ins regularly throughout the year. In the interview at the end of the school year, he even stated that he liked the check-ins and that there could have been more of them. In the observation data before the project started, Sindre was often passive and uninterested, but after the application was introduced, he often appeared to be the most focused student of his group. He even stayed several times after class, when all the students had left, to finish a task. When asked if he ever used the application outside of the French class, he answered:

Yes, I did it a bit. It was like in free periods before the French class, or I would stay after class to finish something, but uh it was mostly like I don't have to do something, so I'll do the application. (I.G2)

In this quote, he was saying that in his free time, he sometimes voluntarily worked on additional French tasks. In the interviews, he also explained why he had written comments on other teams' blogs: 'Yes, I commented a bit, but it was a way to do check-ins' (I.G2). The data log and these first comments showed that Sindre started being active in the French class after the introduction of the gamified application and that he seemed to be using the application in a different way than his three teammates: he was for example actively using the check-in tasks. Several elements in the interview data could be linked to this new interest. He mentioned one reason why he did many check-ins:

When you felt that the *quêtes* were getting a bit long, you could just go in there and look at what you could do instead. (I.G2)

This quote indicated that he selected tasks according to his interest and felt free to switch from one type of task to another even in the same session. Collecting badges also pushed him to work more during the French class:

When I understood that I was getting closer to a new one [badge] I would do a bit more than I needed to get the next one. It was kind of motivating. (I.G2)

His experience of classroom work changed with the use of gamification. He started taking more initiative and following what the others were doing, either to compete against his friends from other groups or to draw inspiration for his own work:

You can see how the others solved the tasks. Some task I don't know how I'm going to do it, so I look, they have done it in that way, OK, so if it looks like that, then I can do it too. (I.G2)

He also mentioned the importance of being in a group:

It wasn't like I don't like working, so I don't do a thing. Now it was like I work both because it's fun and because the group needs it. (I.G2)

Even though this group did a lot of tasks individually, they always seemed to be communicating and making decisions together. The video data also shows them working in pairs on the same task or sharing a level among themselves to finish it. Sindre was often the one mentioning badges or competition. In one conversation where they were looking at a level in the *Voyage* quest and deciding on which task to do next, Sindre exclaimed, "We have to

complete it, so we'll get a badge!" (V.G2D12). In another video, he told the other members of his team that he just received a new badge and jokingly added, "because I'm the best" (V.G2D8). When asked how it was to use the application compared to a usual French class, he commented on the variations of the tasks and the possibility for making choices:

I think it has been kind of motivating compared to everything we could be doing and usually, it's a lot of reading and doing tasks, but it was more like you could choose which task you wanted to do. I think there was a good variation compared to what we're usually doing. I think it was fun. (I.G2)

In the interview, he not only talked about how enjoyable it had been, but he also reflected on the learning experience:

You get many new words and you read better because you have to read some articles, and you get to watch French stuff through films or YouTube videos. You get to hear French too. I think it was a really, really good way to not in a way have to remember to learn French but to take it a bit more relaxed and to get more French knowledge. I think it's good. (I.G2)

Sindre used the application as a competitive game and felt motivated to do more to earn badges and complete levels. This led him to practise French in many different ways and to learn vocabulary, which is crucial to language learning. Unlike his previous experience with learning French, he became a very active student and created his own experience of the application by selecting specific tasks and working outside of the class period.

7.3. Case 2: Ida (Group 3)

Group 3 comprised three students: Ida, Jan and Julie. They spread their work among different quests, especially quests 1 and 3. This group completed the most check-ins, with a combined total of almost a hundred. Their preference for individual work also showed in the observation data. They were often sitting by themselves even during group work. Sometimes, Jan and Ida would be sitting at the same table, but they did not seem to talk all that much. As Mari, the teacher, remarked, "Ida, Jan and Julie are not really communicating together" (T1.6). This lack of communication was also quite visible in this episode retold by Mari during an after-class interview:

Today I went to their group, and Julie was doing this task about an article on a Francophone country. [...] I told them that they should probably work together because it's supposed to be a fairly long article, and

it's better to share it. And then they realised that Ida was already working on this task. She didn't know. She told me 'Oh I was already doing that one'. (T1.6)

Indeed, when asked about how they organised their work, Ida only mentioned that they would divide long writing tasks among themselves:

Some tasks, for example, the writing tasks where you had to write quite a bit, we would share them like you take a part of the task, I take the other part, then we put it all together, and in that way, we could collaborate on the task. (I.G3)

After the first session with the gamified application, Mari remarked on how passive Ida had been and wondered if Jan and Julie might end up doing all the team work (T1.1). This situation quickly changed because in the subsequent interview, Mari mentioned how well Jan and Ida were working and how active they were on the application (T1.3). Ida was a good student with good grades in French, but in the observation data, she seemed shy. She did not participate much in class and often sat alone.

The data log showed that she did the most check-ins in the whole class, with 52 individual tasks completed. In the observation data, Ida worked at her own computer and rarely talked to the other members of the team.

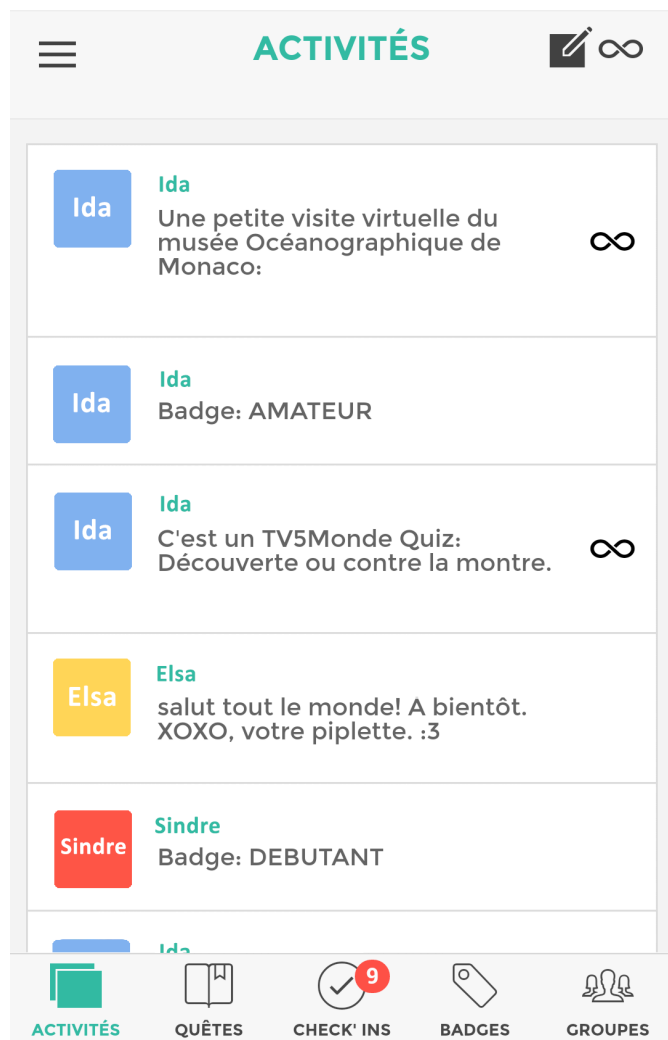
Although Ida rarely participated in class, she became a very active member of the gamified application. She posted many messages and shared links on the message board (see Figure 2).

In the interview, she reflected on why she chose to be active on the message board:

I found many pages I felt had been useful or that I browsed to read a bit of French once in a while, such things, and in a way, I wanted to share them with the others, so I wrote it in the app. (I.G3)

Mari mentioned in an interview that Ida was the student who shared the most links and messages on the application (T1.11). Figure 2 gives an example of such messages (the infinity symbol represents a link to an external webpage):

Figure 2 – The message board (screenshot from the application 12/11/2014)



In the topmost message, she shared a link to a virtual visit to a museum. This museum is situated in one of the cities they visited during their trip to France. In the second message, she shared a quiz from the educational website of the international French language channel TV5 Monde.

Indeed, one of the check-ins she completed the most was *partage* (share a link on the app). She also posted several messages on her team's blog, linked to the check-in tasks. The following excerpt (Figure 3) from the team's blog is an article in which Ida presents a book she has read, with a short text and a photo from the film adaptation.

Figure 3 – Ida’s article “*Un livre*” (screenshot from Group 3’s blog 9/11/2014).

Un Livre

09.11.2014 kl.00:13 | [Blogg](#) | [Ingen kommentarer](#)

Présente un livre:

Bilbo le Hobbit

Bilbo est un petit être paisible et sans histoire.

Son quotidien est un beau jour, avec Gandalf et treize nains ils voyagent dans un voyage périlleux.

C'est le début d'une aventure, qui mènera Bilbo à la Montagne Solitaire gardée le dragon Smaug.



In the interview, she explained how she selected tasks. She chose to do check-ins, especially when the quest tasks were too long or difficult: “Sometimes it’s in a way nice to do something a bit faster, so like you don’t start struggling with one task” (I.G3). Interestingly, the data log

showed that she completed half of her check-ins outside of the French class hours, and some were even solved outside of school hours. She confirmed it in the interview by saying that she had done some tasks outside of school. She developed good learning habits; she used specific learning websites that she shared on the application, and she did additional tasks on her own. She used the application in her own way, to support her learning. When asked about the different ways they could complete tasks, she said, “I think it was good that we could choose which method we wanted to use to solve the tasks” (I.G3).

Ida’s use of the application clearly demonstrated that she found a space to communicate and express herself. Despite her rare participation in the French class, she was very active on the message board and the blog. The application’s design gave her an arena in which she felt able to participate in the class conversation.

7.4. Case 3: Nora (Group 4)

Group 4 consisted of three students: Nora, Maja and Ingrid. They were friends who asked to be in the same team. They had done no check-in tasks at all. When asked about their strategies and working methods during the group interview, they replied that they did all the tasks collaboratively, which was why they had not done any individual check-in. “We thought about the application mostly as group work. It was more fun to work together” (Ingrid, I.G4). The three girls always sat together on one side of the table, most of the time in front of one computer.

For this third student case, any of the three students could have been picked. Nora was selected for two reasons; during the interview, she talked the most, and the teacher singled her out as a potential leader in this group:

I have the feeling that Nora is kind of the leader here, that she’s guiding the others. They are always sitting in front of one computer, and often Nora is the one doing something. (T1.11)

In several instances, Nora talked about how they preferred working together on tasks. She reflected on how they organised their work collaboratively:

I think it was an important part of the project for us to do it together. I think it would have been boring for us if we had done things separately.
We made all the decisions together. (I.G4)

In the task selection, they chose together according to what they had done during the previous session or to what they felt like doing that day. “We kind of jump back and forth between the tasks and do what suits us that day” (I.G4).

Their collaborative way of working was mentioned regularly by Mari during the after-class interviews (T1.1, T1.3, T1.4 and T1.5). For the teacher, that was how she expected the students to be working with the application when she participated in the design process.

Although in the observation data, they would several times continue working on a task during the mid-period break, the three students mentioned that they sometimes found it difficult to focus on the tasks and work efficiently:

It's good that it is free and that we can choose [...] but it is boring when we sit there with one task for a full hour. (I.G4)

This might also explain why they preferred more open types of tasks to writing articles on the blog. Many times in the interview, Nora mentioned that their favourite tasks were the creative ones and that they often selected them over other types of tasks:

I liked the creative tasks where we had to do things like, for example, taking a picture of ourselves as a Norwegian stereotype or French. It was fun! It's a bit difficult when we have to write a text because you feel that it takes so much more time. But with the creative tasks, it's more fun because you learn much faster. (I.G4)

This preference for solving tasks in creative ways could also be observed on their blog, which was very multimodal. Out of their 20 blog posts, more than half contained images. They also made videos, quizzes and podcasts. They enjoyed these variations in the tasks and the media used to perform them, as Nora explained when asked how it was to work with the gamified application:

I felt that there was some variation. We didn't just sit the whole year and looked at Mari talking, maybe that would have been a bit dull. (I.G4)

When asked to compare it with a usual French lesson, she again emphasised the greater variation in the tasks that made every period feel different from the others:

In a usual French period it's not that it is like boring, but it is a bit normal. It has been quite exciting to get something new to do in each lesson, like now, we're going to work on something different. (I.G4)

Similar to Sindre and Ida, Nora found her own learning path on the application. Her focus on collaborative work and creative tasks guided her experience of the gamified class. Additionally, the application's structure gave her the opportunity to choose different resources, tasks and paces.

8. Discussion

The analysis shows that the students take the initiative, create their own learning paths and choose different strategies to perform the tasks and use the application. From these elements, it can be inferred that the application supports the emergence of learner autonomy. When observing how the students use the application in practice, Sykes and Reinhardt (2012: 41) comment comes to mind: “a player may choose at any time to not interact or to interact with the game in ways not anticipated by the designers or other players”. The students find ways to use the application that would fit their own interests and learning styles, independently of how the different functions have been designed. Although the application is clearly divided into individual and collaborative tasks, the students make use of these categories on their own; some groups decide to work individually on group tasks or to drop the individual tasks altogether. It demonstrates their ability to take charge of their own learning, in other words, their autonomy (Holec, 1979).

In addition, this particular interplay between individual and collaborative working method is emphasised as an essential component of learner autonomy (Lewis, 2014 ; Zourou et al., 2017). In the analysis of the data log, it is clear that not only each group has its own progression in the quests, but also that individual learners have differentiated experiences of learning. The application gives more choices to groups and students at different levels (the choice of task or working method), as well as when to perform the tasks, and supports the emergence of learner autonomy.

Sykes and Reinhardt (2012) assume that when gamers are playing a game and feeling in control, they want to continue playing it. Indeed, some students work on the application’s tasks outside of the French period and for others, even outside of school time. It is not unusual for some students to go on working on the tasks during break times. The feeling of control over their own learning and the multiple ways of using the application motivate the students who were not previously interested in learning French. Some students are particularly stimulated by the application’s gamified structure and potential for playfulness and competition.

Another assumption is that open-ended tasks support the emergence of learner autonomy by favouring a learner-driven approach and giving learners more perceived agency (Sykes & Reinhardt, 2012). The analysis of the students’ productions shows that they perform the tasks in many different ways and use multiple types of media, as in the third student’s case. The

tasks' openness provides the students with the opportunity to choose how they want to undertake these according to their interests or abilities. The analysis also reveals that the students have created many different types of productions using the foreign language, including videos, podcasts, texts and images. They have actively used the foreign language on their blogs and on the message board.

In Chik's (2011, 2014) studies, her informants opt to support their learning in different ways through gaming and participation in Internet communities. A similar variety of learning activities is found in some descriptions of technology-based approaches and WebQuests (Benson, 2011 ; Koenraad, 2005 ; Koenraad & Westhoff, 2003 ; Villanueva, 2009). In addition, Pellerin (2017) finds that giving students the choice of which learning applications they want to use supports the development of their autonomy. In the same way, the learners in this study choose different resources, either provided by the application (message board and check-ins) or on the Internet (Google Translate and Quizlet). The different types of resources available create the opportunity for different experiences of learning. This gives creative students the flexibility to perform tasks in any way they wish. It also offers shy students a way to participate in the classroom community. They could be active on the message board, where they only need to write short messages, or on the blogs, by either creating new posts or commenting on previous ones.

9. Conclusion

This study has shown how design principles for learner autonomy can be operationalised in the design of a gamified application. The analyses of the data log and the interviews with the students indicate that the application supports the development of learner autonomy. The students take control of the learning activity and create their own learning paths. The structure of the gamified application provides a frame within which students could allow their learner autonomy to emerge and participate in the collaborative dimension of learning. However, only thirteen students participated in the research project and the analysis of this study was particularly focused on three student cases. If the analysis is revealing very encouraging findings for the development of research on playful learning in FLL contexts, a greater sample of students from different classes and further testing is required in order to investigate more deeply the relation between gamification and learner autonomy. Nonetheless, this study gives concrete examples of how a gamified resource is used in practice, along with its potential to address some central issues in the FLL field. It also points at some elements that could be

interesting to research further, for example, investigating how playful learning situations could encourage shy or anxious students to participate more in the classroom community.

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Website

EngageLab (nd) *EngageLab's homepage*: <http://engagelab.net/>

Appendix 1

Code name	Description	Example from data
Agency	Talking about taking initiative, making choices on their own.	'I really liked that it was very interactive and that we could decide on our own what we wanted to do'. (Peter, I.G2).
Compare to normal class	Discussing how it was to work with the application in comparison to a normal French period	'In a usual French period it's not that it is like boring, but it is a bit normal. It has been quite exciting to get something new to do in each lesson, like now, we're going to work on something different'. (Nora, I.G4)
Competition	Discussing competition, earning badges, feeling rewarded or competitive	'I think it's fun to have something to push you a bit to do it or to do more. And it's always nice to feel that you've achieved something and got a little badge'. (Marianne, I.G2)
Differentiated learning	Talking about the variations among groups, students, tasks or working methods	'It was quite free to do the tasks, so one group had done it in this way, and another group had done it in another way'. (Erik, I.G1).
Difficulties	Discussing when things are getting difficult: either boring, too long, technical issues, feeling lost and so on; and talking negatively about the experience	'It's really open and it can be a bit difficult to choose what we will work on and how we will do it'. (Erik, I.G1)
Learning	Talking about learning the foreign language and learning the different language competences	'It is more learning for learning's sake. You're not doing it to get a better grade in French but to learn French'. (Peter, I.G2)
Motivation	Discussing what motivated them when working with the application	'It may be a bit silly but I think the blog was a good way to show what we had done and not just do it and delete it. You post it and it feels like, it feels better in a way, like you've accomplished something'. (Marianne, I.G.2)
Multimodal	Discussing the use of different media when working with the application	'We posted photos and things like that. I think it was fun. We posted a song a couple of... no, once'. (Nora, I.G.4)
Peer interaction	Discussing different types of interactions with other students: either inside the same group, in the classroom or on the application and blogs	'It was fun to visit other teams' blogs and see what they had done and comment on it'. (Erik, I.G1)
Positive things	Talking good about their experience, the application, and about having fun and being playful	'Working in these gamification groups has been really fun!' (Peter, I.G2)
Strategies: <i>selecting</i>	Discussing how they selected the tasks	'We chose [a task] from the categories that were there and from how far we had come'. (Jan, I.G3).
Strategies: <i>organising</i>	Discussing how they organised their work on the tasks (e.g., collaborative or individual work)	'We shared the tasks like you take a part of the task, you take the other and then afterwards, we put it together'. (Ida, I.G3).
Strategies: <i>completing</i>	Talking about completing a task, finishing something.	'That's what we were doing in the group, and we wanted to finish it'. (Marianne, I.G2).
Teacher	Discussing the role of the teacher and their interactions with the teacher during the work with the application.	'We always got help to understand [the directions] and get through the tasks'. (Marianne, I.G2)
Using the application	Discussing things related specifically to the use of the application and its functions: the content, the unlocking system, navigating in the interface, and so on.	'The pages were easy to understand and it wasn't difficult at all to find out what we should be doing during the period. It was easy to find our way'. (Ingrid, I.G4)

Overview of the coding scheme: examples from the coding categories of the students' interviews