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Who Said Accounting Was Boring? Let's Play Cards. The DAC Project

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Abstract:

Accounting is often regarded as an abstract –and hence, boring– subject by students, although it is strongly linked to real life. In this paper, an experimental activity is presented as a complementary tool to theoretical classes in the subject Introduction to Finance Accounting, taught in English at the University of the Basque Country (UPV/EHU). This article aims at showing the use of the DAC project as a methodology that will help foster the motivation of those students as well as their understanding of the basic accounting concepts. Using several traditional card games, the authors expect to create a user-friendly learning environment, where the students feel motivated towards their self-learning construction process and can, at the same time, become comfortable with the basic accounting concepts and terminology in a CLIL (Content and Language Integrated Learning) English subject. After a thorough revision of the literature on games being used for educational purposes, we explain how the DAC Project works in class, identify the main impacts on learning, analyse the outputs and reach some relevant conclusions. The main results of the literature consulted show that using cards in Higher Education produces significant improvement.

Key words: Serious games; Cards; Introduction to Financial Accounting.

JEL classification: A220.

1 Introduction

Although Accounting is strongly linked to real life, it is often regarded as an abstract – and hence, boring – subject by students. This paper presents an experimental activity that works as a complementary tool to theoretical classes of the subject *Introduction to Financial Accounting*, taught in English at the University of the Basque Country (UPV/EHU).

Rollings and Adams (2003, p.34) defines a game as “*a form of participatory, or interactive, entertainment*” and contrast this with passive activities, such as watching television or reading. On his part, Glover (2013) states that “*learning is*

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a participatory process”; therefore, students would clearly obtain better learning results from incorporating gaming concepts with education than with these other, passive activities.

Deterding, Dixon, Khaled & Lennart (2011, p.3) state that “*serious games describe the use of complete games for non-entertainment purposes*”. Therefore, under the “serious games” framework, and specifically by using several traditional card games, the authors expect to create a user-friendly learning environment, where the students feel motivated towards their self-learning construction process.

As several authors have posed in the past (Bénabou & Tirole, 2003; Cherry, 2017; Ryan & Deci, 2000), motivation may be intrinsic or extrinsic, which means it may come from within the individual or from external sources. It has also been proved (DeLong & Winter, 2002) that when students have a strong intrinsic motivation, their learning improves much more than when their motivation arises from external factors. In fact, Bénabou and Tirole stress the central role played by intrinsic motivation in learning, and the Vanderbilt University Center for Teaching claims that “*Intrinsic motivators include fascination with the subject, a sense of its relevance to life and the world, a sense of accomplishment in mastering it, and a sense of calling to it.*” All this means lecturers must strive to build intrinsic motivation in their students by stimulating them to be interested in the activity leading to learning. In our opinion, games are highly attractive activities to students, and they will boost their intrinsic motivation towards learning the subject.

The Didactic Accounting Cards project (DAC) consists of using the “serious games” methodology by playing cards in the classroom, with the aim of creating an environment in which students of Accounting will find real economic and financial situations to be interpreted and recorded in their accounting books.

This way, students will become comfortable with the basic accounting concepts and terminology, which is essential for students to construct their own learning process, as Accounting is an area that must be learned step by step, advancing in the building of knowledge. Proper learning from the very beginning of these basic concepts and their relationship is critical for students. They must master the mechanisms of accounting in order to be able to fully understand the principles and measurement standards behind the transactions encompassing the framework of the discipline. Thus, students will acquire the tools needed to build their knowledge in a critical thinking way, and not just struggle with the double-entry method as often happens, even with students taking advanced courses in Financial Accounting. In other words, through the DAC Project we aim at helping students understand the logic and reasons behind the accounting rules and principles, overcoming the simple memorization or *surface approach* towards the discipline

(Biggs, 1987) as pointed out by different authors, such as Gonzalo & Garvey (2007, p. 17):

“...since Spain designed a compulsory General Accounting Plan, a lot of teachers’ tasks in introductory, intermediate and advanced courses in Financial Accounting consists of teaching and justifying the accounting resolutions in the current legislation. Most times there is no time, no wish or neither of them, to explain the reasons for each of these resolutions, which results in the student – who must frequently learn the relevant entries by heart – lacking the most important part of his learning, that is to say, the understanding of the logic inherent to the rule, which could allow him to comprehend it fully.”

In addition, we deem paramount not only the acquisition of these basic concepts from the start but also, that students master the terms in English as well, which is especially relevant in non-English speaking countries.

At the same time, the use of actual cards for learning Accounting implies that students will visualize and materially handle what they have to interpret. According to Kouyoumdjian (2012) *“the right visuals can help make abstract and difficult concepts more tangible and welcoming, as well as make learning more effective and long lasting”*. We agree that using tangible objects as cards for learning abstract concepts involves a faster recognition and a clearer application of what has been learned in theoretical classes.

The games proposed in the DAC Project go beyond a playful activity – though they are fun, indeed –, since they include the explanation of certain accounting concepts by students themselves, which in our view boosts their comprehension of what is being taught. *“When a student learns by actually doing something, active learning, they retain about 75%. If the student actually does something and then explains it to someone else, then the retention rate increases to the 90% range”* (Raux & Smith, 2007). Therefore, the verbalization of what they do with cards (the game) is essential for the comprehension of the matter.

2 Difficulties Detected

After reflecting on our teaching role in Introduction to Financial Accounting at the Degree in Business Management, and bearing in mind the feedback received from students, we get the output that a considerable amount of them take longer than expected to learn the basics of Accounting.

When entering the first semester of the Degree, these students already come biased about the difficulty pertaining the subject, which they find boring and not easy to apply. This fact implies a negative attitude towards their learning process and the risk of creating a non-participative environment. This lack of motivation can cause

students to get lost from the very beginning. Financial Accounting is an area that requires the student to build his or her own learning in a progressive way. As stated by Jaijairam (2012, p.75) “*Because accounting is cumulative in nature, each learning objective builds on the previously learned concepts and procedures. A student must master some of the most fundamental principles at the beginning of the course in order to tackle more difficult concepts later on*”. The understanding and integration of the concepts, principles and measurement standards studied in the first term are essential in order to continue with the future ones.

Therefore, the first classes are paramount for students to be able to fully comprehend the basic concepts: basic accounting equation, the double entry method, identification of equity items, such as assets, liabilities, expenses and revenues. If the student does not master them, he or she will easily drop out, as they will not be able to understand, think logically or connect concepts in order to advance with the subject.

We frequently find this difficulty in understanding the economic and financial facts even in students with a high degree of motivation for learning. These economic and financial facts must be interpreted and then recorded in the right place, because this will affect the company balance. As a result, we find that students often risk memorizing and mechanizing the accounting procedure, but they understand neither the theoretical frame nor the main accounting principles underlying beneath. In this case, a little slip may mislead them into confusing left and right, which eventually results in an enormous accounting error.

This “memorizing and mechanizing” method is a *surface approach* to learning as opposed to the *deep approach*, as explained by Biggs (1987), in which students strive to learn and search for meanings and relationships that will make them be critical when making decisions. This is what happens in the accounting subjects taught in our Degree and in the students’ native tongue, where they usually learn the subject with the only aim of passing the subject at the end of a semester, so we can imagine the results when it is taught in a foreign language as English.

As for Turner & Baskerville (2011, p.1) “*There is evidence a large proportion of accounting students experience extrinsic motivation when studying accounting at university, which has a strong relationship to surface learning. The experience of intrinsic motivation is a necessary precondition for students to experience deep learning*” On the other hand, Helliard (2013, p.513) claims that “*Teaching technical material can be imparted using an information processing approach, such as by lectures or tutorials, but learning transferable skills requires a constructivist, situated or experiential approach using a variety of different teaching and learning methods.*”. These are the reasons why we have tried to develop our games methodology from the introductory courses in order to foster

this necessary intrinsic motivation towards the achievement of a deeper approach to the learning of the framework and principles of Financial Accounting. In the following courses, the students will be able to build a complete knowledge of the subject together with the acquisition of the skills demanded in the accounting profession.

3 The Usage of Card Games in Higher Education

It is relatively easy to find shared difficulties, challenges, and concerns in different disciplines of Higher Education regarding this current passive learning approach, as well as educators trying to evolve to new active learning methodologies. The effectiveness of the usage of the card games in students' learning as a supplementary tool for theoretical classes has been proved in multiple disciplines. In this way, Rajashekar & Bellad (2016) show the results of using card games in Physiology, finding significant improvements in the students' academic performance and their ability to analyse and retain knowledge for longer periods.

Previously, Odenweller et al. (1998) also emphasized that card games enhance students' ability to analyse and retain the information presented in class: *"the games reinforced information that they had previously learned and required them to review and apply those concepts in another context"*. In addition, Barclay et al. (2011) found significant increases in Pharmacy practice assessment scores as a result of incorporating educational card games in their syllabus. Rastegarpour & Marashi (2012), lecturers of Chemistry, also highlight the benefits of using those games in the classroom: *"The results demonstrated that playing games endorsed active learning, concentration, and utilization of trial and error"*. They also found that games are influential in the learning of abstract concepts promoting intangible associations between different topics and a meaningful learning.

Furthermore, various studies point out the improvements in the students' engagement and learning approach, such as fostering discussions about the concepts of the topics (Rajashekar & Bellad, 2016), and promoting interaction between peers, since it allows students to benefit from the experience of other classmates (Rastegarpour & Marashi, 2012). In this way, students value the benefits of this tool and request its integration in their learning process: *"Students wanted the game for every chapter and after a class test of that chapter"* (Rajashekar & Bellad, 2016).

Notwithstanding the foregoing, the use of card games is still incipient; in fact, the authors have not found any publications on the use of card games for teaching Accounting. Therefore, further development and analysis is needed to achieve a broader dissemination and standardization in this area. In the words of

Rastegarpour & Marashi (2012) "*The full potential of educational games has not been fully discovered*".

4 Contextualization

We decided to focus our initiative on a group of freshmen enrolled in the Degree in Business Management at the University of the Basque Country, in the subject *Introduction to Financial Accounting* taught in English. The official languages of the degree are Spanish and Basque, so English is a foreign language for all of them. In this group, there are also some Erasmus students, but none of them are native English speakers, as we do not receive students from English speaking countries. They come mostly from the Netherlands, Poland, Latvia, South Korea, China, France, Italy and Germany, which makes this group a largely intercultural one.

Accounting subjects are not taught at Secondary Education in Spain, which means the subject is absolutely new for most students in this group and usually regarded as quite hard.

They must, consequently, manage in a quite heterogeneous group encompassed by students with very dissimilar profiles regarding the following aspects:

- **Nationality:** approximately 50% of the students enrolled in the subject are on an Erasmus program and come from a wide range of European countries. They apply for this subject due to their preference for attending classes taught in English rather than in Spanish.
- **Different backgrounds:** students come from different academic backgrounds (vocational training, GCE "A-levels", foreign universities, etc.). Most of them are following business studies, but we also receive students that are enrolled in Engineering and want to obtain some knowledge of Business.
- **Semesters at University:** Spanish students are supposed to attend this subject in their first semester of their freshman year, but we can receive "regular students" as well as "repeating students" (Arquero, Byrne, Flood, & González, 2009) and this fact may vary every year. On the other hand, Erasmus students have already studied several semesters at their universities (they usually take the Erasmus program in their Junior or Senior years at University) and they already possess some knowledge of Accounting.

The introductory class is dedicated to enquiring into their knowledge about the economic events that can affect a company, by comparing them to a variety of situations of this nature in which they have already been involved during their lives (paying utilities' bills, borrowing money, investing in IT equipment, etc.). Afterward, they start establishing relationships with the accounting concepts as

well as with those transactions that affect a company. From the outcomes obtained, the teacher receives feedback on their knowledge. When there is such a varied group, the results of this first approximation to the discipline can also be diverse.

These facts add a difficulty to the accounting lecturers involved, who are already concerned about the learning outcomes obtained in the group in the Spanish language. Moreover, we must keep in mind the extended fear to publicly participate in class, moreover if it is in English. As Arquero and Donoso (2004) point out, issues as stage fright, low self-esteem, and lack of fluency explain the scarce participation of students in accounting classes.

As we can see, there are a few difficulties in the way, so not only do students need to be motivated, but they must also have a positive attitude towards all these facts in order to achieve successful learning. This situation encourages us to search for different ways to engage the group that can offer a way for motivating and stimulating their learning, together with the methodologies already in practice, which are presented below. We consider we must create, from the very beginning, a student-friendly environment in which they will feel confident and find no obstacles in asking, not only the teacher but also their more successful classmates about the doubts they find in the construction of their learning.

5 The DAC Project

Besides traditional master classes, other types of methodologies applied in this first year in order to pursue dynamic working, include the following:

- Group tasks: forming groups to get them to work in cooperation, by mixing students with different backgrounds, levels and nationalities, in order to prepare tasks than can be assessed considering the presentation, both written and oral, of the different lessons studied. The groups change during the semester. According to Goikoetxea & Pascual (2005), compared to traditional learning methods, Cooperative Learning *“has a positive effect on academic performance as well as on other variables, such as productivity and [students’] attitude towards learning”*.
- Quiz solving: organizing small contests, both individual and in pairs, to encourage students to think quickly about basic accounting concepts that should be mastered as a condition to be able to follow the subject. These tests are delivered to the students after each topic has been presented in class. ICT applications such as “Socrative” or “Kahoot” under the gamification methodologies are really welcome by our students.
- News search: asking students to bring a piece of news found in the media related to the topic studied the week before, both from Spain as well as from

the Erasmus students' countries. This is followed by a short discussion on each of them.

- Questioning and Discussion: posing questions in class and encouraging students to discuss them allows the lecturer to evaluate their knowledge and their thinking processes, as well as their ability to analyse or synthesize complex concepts. This type of activity is recommended by the American Institution of Certified Public Accountants (AICPA, 2017): “*questioning students in a way that helps them evaluate their own thought processes by probing the thinking behind their statements and questions. Also includes asking students different types of questions: knowledge questions, comprehension questions, analysis questions, synthesis questions, evaluation questions*”.

Apart from the aforementioned, other interactive tools can be used, such as management and computer software (Vician et al., 2017), online learning (Žižović, Kaljević & Pantelić, 2014) or business simulations (Riley et al, 2013). Other games¹, i.e., the crossword puzzle (Azis & Mat, 2008), Monopoly (Tanner & Lindquist, 1998) or Jeopardy (Bee & Hayes , 2005) have been successfully used and researched in the past as effective complementary methods for the learning of Financial and Accounting disciplines.

The use of ICT facilitates the delivery of a variety of academic resources giving the lecturers the chance to offer interactive activities to be solved both in class and autonomously. Blended learning is available by adding these above-mentioned resources to the traditional face-to-face lecturer-student relationship. Students are encouraged to participate in the Learning Management System (LMS) where all the resources needed to follow the subject are available, such as periodical upload of quizzes and open discussion lines for students to issue their opinion about different aspects regarding the current topic. These latter activities are delivered as a surface approach in the first year, with the aim of introducing them into critical thinking.

Therefore, Problem-Based Learning, which we consider much more complete, is left for further advanced accounting courses “*wherein students are encouraged to deal with the areas of self-learning and acquisition of knowledge in an autonomous way*” (AICPA, 2017). It sets the advantages of cooperative learning together with the necessary critical thinking and a deeper management of the accounting knowledge, as it develops skills relevant to solve the real business problems required by accounting professionals.

¹ An extensive review can be found at Moncada & Moncada (2014).

However, we have appreciated that our Freshmen, compared to Sophomore, Junior, and Senior students, are less keen on using on-line resources than on the so-called “*traditional, teacher-fronted, lecture approach*” (Corral and Ipiñázar, 2014). This appreciation is also stated by De George-Walker and Keeffe (2010), who consider that blended learning courses offer such variety of choices to students that they probably feel overwhelmed and not fully attended to.

As a new learning tool, complementary to the ones listed above, and under the context of serious games, we are developing what we have named “the DAC Project”. It consists of a series of ten-to-fifteen-minute accounting card games, introduced as a supplement to the classes, in the last fifteen minutes of a two-hour class.

The main objective of the games is the acquisition, in a visual, easy to handle and quick way, of the basic accounting topics, that is to say, the settlement of the fundamental concepts: assets, liabilities, expenses, revenues, gains and losses and their relationships: basic accounting equation and recording of transactions.

We believe that by means of this playful tool, the environment in class is more relaxed as it works as an icebreaker in order to overcome the above-mentioned barriers. Using it, our students can communicate, make mistakes, win, lose, accept, correct, and learn from feedback without any fear to look foolish before their peers.

6 Structure of the Cards Game

6.1 Design of the cards

The Didactic Accounting Cards (DAC) used for these games are made of laminated cardboard. They are similar in size and appearance to the ones used in common card games, but with the names of the accounts and a central image representing their meaning. As the main tool of the game, they must be tailored to the students’ profile and the learning outcomes considering the following variables, among others:

- The terminology to be used: Using technical and accurate terminology may limit and slow the dynamics of the game to some extent in its first stages, but it also allows students to become familiar with the real terminology to be used.
- The number of cards: One of the key aspects to consider is the accurate selection of the cards to be used, selecting those which are more related to the syllabus of the subject. Besides, some of them will be used more frequently (banks, clients...), as they must be used in many different operations. Following these criteria, we selected 70 unique cards and 30 recurring ones

(each one repeated several times). All in all, there are 160 cards, which permit dividing them into different decks.

- Descriptive pictures: “*Learning through images*” being one of the principles behind DAC, each picture should represent an account in such a way that it allows students to easily identify the picture with the account it refers to. The challenge lies in representing abstract or complex economic events.
- The use of the accounts numbers: Their insertion has the advantage of offering students a hint to the comprehension of the cards and their accounting placement, helping them to create a mental chart of the accounts. In more advanced levels, these numbers may facilitate the game in excess.

Additionally, other features could be added, including but not limited to: the allotment of different points to each card in order to prevent students from constructing excessively simple entries; to design DAC in a material where students can write and erase monetary amounts; to complement them with wild cards or jokers that will assist the students in certain situations when book entries cannot be completed.

Pic. 1 Design of DAC



Source: Author's design.

6.2 Dynamic of the Games

The characteristics of DAC allow multiple game designs, both generic – to be used as a reinforcement of the previously explained theoretical knowledge –, and specific – as a complement to certain aspects of Financial Accounting (e.g. changes in inventories recording) –. For illustrative purposes, several of these games are described below, to be used not only in *Introduction to Financial Accounting* classes but in intermediate levels as well.

GAME 1

- Goals of the game: To fulfill a Balance Sheet with the cards given by the lecturer and to reflect in it the transactions suggested.
- Related contents: Net worth equation, assets, liabilities, equity and balance sheet structure.
- Learning outcomes: Understanding the net worth equation through transactions not affecting the company's equity. Identifying and classifying the equity items. Determining the equity value and its components.
- Recommended number of students in each group: 3 to 5
- Level of difficulty: Basic
- Estimated time: 10-15 minutes
- Cards to be used: Selection of Balance Sheet cards: intangible assets, property plant and equipment, inventories, suppliers and other payables, trade and other receivables, current payables for loans, cash, banks and financial institutions, share capital, non-current payables for loans, debentures, and others.
- Dynamic of the game: The lecturer selects the cards to be used, and then organizes them in decks with the same number of cards, giving one deck to each group. Students must fulfill a Balance Sheet with them. The first team to finish it correctly will be the winner. Then, the lecturer proposes several economic facts to the students, so that they represent their influence in the balance.
- Example: The lecturer delivers several cards (*industrial property, information technology equipment, buildings, merchandise, cash, share capital, non-current payables to suppliers of fixed assets, suppliers, current debt with financial institutions, etc.*) to each group of students so that they conform the Balance Sheet of a company. Then, students organize the cards as shown in Picture 1. Afterward, the lecturer suggests several transactions and the students must place the cards accordingly, in order to show the changes in the balance.

Pic. 2 Balance Sheet of the Company Designed by Students



Source: Author's design.

GAME 2

- Goal of the game: To make accounting entries with the cards available on the table
- Related contents: Debit and credit agreement of assets, liabilities, and equity; recognition and measurement standards related to specific financial and economic facts: inventories, commercial transactions, personnel expenses, intangible assets, property, plant and equipment, trade bills receivable, prepaid expenses and deferred income, financial investments, etc. This content will be adapted to the needs and knowledge of the students
- Learning outcomes: Understanding the accounting operations, the General Accounting Principles and the recognition and measurement standards; recording the most usual transactions in the journal
- Recommended number of students in each group: 3 to 5
- Level of difficulty: Intermediate (students should possess enough knowledge to record accounting entries with confidence).
- Estimated time: 10-15 minutes
- Cards to be used: Balance sheet and incomes/expenses cards. Choosing a lot of cards is convenient to facilitate students create many diverse accounting entries. The type or cards to be selected will depend on the theoretical knowledge previously acquired by students.

- Dynamic of the game: The lecturer selects cards based on the knowledge of students, choosing those that can cause certain accounting entries and include others that act as distractors. In order to avoid doing excessively simple entries, cards have different scores. In turn, each student throws one of his or her cards on the table, so as to create an entry for the highest possible value. The student who achieves it, calls the lecturer and explains aloud the details and meaning of the entry so that the coordinator can validate it. If his explanation is right, he takes all the cards forming it. The winner is the student who obtains the highest score and not the greatest number of cards.
- Example: A student receives the following cards: *banks* – 1 point; *merchandise sold* – 2 points; *output VAT* – 2 points; *salaries and wages* – 3 points; *current investments in equity instruments* – 3 points; *Social Security payables* – 5 points. After several turns, on the table, there are the following cards, among others: *cash* – 1 point; *transport expenditure* – 3 points; *client advances* – 3 points. Students will put on the table their *output VAT* card and, in the following turn, the *merchandise sold*, and complete the entry as shown in Picture 2. Then, he or she will explain it to the lecturer so that the entry is validated.

Pic. 3 Example of Entry with DAC



Source: Author's design.

7 Conclusions and Limitations

Our experience in the teaching of Accounting and the difficulties observed in the learning of our students lead us to go ahead in the search for new active methodologies.

Our experimental proposal, the DAC Project, is a teaching tool that, through different card games creates a student-friendly environment which encourages them in their constructive learning, and motivates them to participate in the class from the start.

We suggest that by playing the different games offered in a progressive way of difficulty, the student will overcome the problems arising from the fragmentation of the contents and from the excessive mechanization and memorization of the accounting concepts ("*surface approach*" to learning) and will understand their interrelationship ("*deep approach*" to learning).

The DAC Project is presented as a tool aimed at improving the understanding of the subject "*Introduction to Financial Accounting*" in English for a very heterogeneous group of students in the first year of a degree in Business Management, i.e., in their first contact with the University and, in most cases, with the Accounting area. However, the design of cards is planned to provide flexible and versatile games that allow different dynamic levels, tailored to progressive objectives.

In order to put the games into practice, we recommend a periodicity of about two weeks, adapting them to the contents taught in a progressive way; thus, the student has the obligation and the opportunity to review what has been learned and return to certain concepts over and over again.

"The act of gamifying an educational experience alone is not enough to make the experience rewarding, instead it should serve primarily to make something that is already rewarding more rewarding – perhaps by encouraging learners to invest more time than they otherwise would." (Glover, 2013, p.2003).

Through the games, the students must participate, making fast decisions in a limited period of time. This factor provides the competitive element that serves as a motivating incentive and changes the perception of students towards the accounting area. They acquire responsibility for building their own entries and accounting transactions in a reasoned way, applying not only their knowledge but also their creativity in order to win the game. In the same way, the game fosters their ability to take responsibility for the learning of their classmates, assuming this fact as a win-win.

In a first experimental trial performed during the 2016/17 academic year, great acceptance of the dynamics has been detected, highlighting the positive feedback of the students to learning through the visual images shown in the cards, and also a favorable predisposition for dynamic cooperation and mutual responsibility. We also appreciate a change of roles, towards a more active student role, where he or she not only must record economic transactions, but also be able to communicate the accounting concepts used in their construction. On the other hand, in this first approximation, lecturers have noticed improvements in the acquisition of the accounting terminology, in fast accounting thinking and in their motivation towards this area, aspects that will be researched in subsequent studies.

As for the limitations, we can highlight the need for the presence of the lecturer monitoring the dynamics of the game in the classroom, which means students cannot possibly play on their own. We have also noticed that students often continue playing even when providing erroneous entries. Besides, we suggest the valuation of cards with different scores depending on their degree of complexity and on the account frequency in the business context, so as to avoid the tendency of students to fulfill excessively simple operations. Furthermore, the non-inclusion of monetary amounts in the cards may limit the development of some games. We propose to overcome this obstacle through the redesign of the cards in a material that permits adding and deleting content.

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