Journal of Modern Education Review

Volume 7, Number 12, December 2017

Academic Star

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Journal of
Modern Education Review

Volume 7, Number 12, December 2017

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Journal of Modern Education Review, ISSN 2155-7993, USA
December 2017, Volume 7, No. 12, pp. 833–840
Doi: 10.15341/jmer(2155-7993)/12.07.2017/001

http://www.academicstar.us

Five Pieces of Trash

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Abstract: Marketing is changing rapidly as are the environments in which it operates. Marketing oriented classes like Creativity, New Product Development and Social Product Innovation need to move beyond theory and offer applied opportunities for the students to learn. This is about a simple low cost exercise used in class to teach the idea of modeling. In Design Thinking terms, constructing very basic prototypes or even brainstorming in 3D. The challenge for students is to learn how to model rapidly and economically and this does both. The challenge for professors is that many business schools do not have maker spaces.

Key words: marketing, five pieces of trash, 3D print

1. Introduction

Learning to prototype is important in the classes today. In the Marketing department, there are classes that could or should use creativity exercises, and maker spaces. Some of these are courses in Creativity, New Product, Innovation, Design Thinking and many more. In years gone by the theory was that after much research you would begin to model. In those days modeling and prototyping were expensive.

What has changed? Three things are changing rapidly to challenge the Marketing Professor with the opportunity of teaching one of these classes. First, business schools are pushing the concepts of application, or doing in the class. In the author's university it is Learn, Make and Do. In addition, the idea of the flipped classroom often includes doing things in the face to face time of the class. Second, the current push for the Design Thinking approach advanced by the Hasso Plattner Institutes at Stanford, Potsdam, and Cape Town. In this system of innovation, the concept of prototyping is important and is used not only as a method of providing a late stage idea to clients but as a means of ideation. Third, the cost of prototyping is coming down to almost nothing. Students, at the author's university, can go to the library and 3D print a model of almost anything that they want.

With all the changes impacting marketing professors they now face the challenge of how to include modeling and prototyping in the class syllabus. It is easy to send students to the library to 3D print an idea and bring it back to class but that is when the idea is somewhat fixed. How do you teach modeling as a creativity tool in the class room in a modern business school that does not have a designated maker space?

In models of innovation and new ideas like Design Thinking, Stage Gate, and others you find the maker phases. If, as in most cases, you end up iterating by pivoting, or going back around there are more maker phases. How in the modern clean classroom do you get students to be creative in making things? It is hard enough to get students to iterate once they have the resources. There is a natural tendency for ideas to solidify when you start

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creating models. If you want to pivot, iterate, or change there are several reasons for resistance to change.

Humans have a seemingly intrinsic resistance to change when they have constructed a model in 3D. For some reason, a 3D model seems to lock up the mind especially after you have cleaned up the mess and set the model on the table. Why is it so hard to simply put that model aside and start a new approach? You do this in ideation, you do this in sketching, so why not in modeling. Students find it hard to pivot or iterate when a model is not getting good response. Students may feel limited in their creativity given one set of resources

In classes like New Product and Creativity in Marketing, the challenge of offering an applied experience in the traditional business school classroom is large. In the author's case, the business school occupies a new building completed in 2013 with no thought to, "maker spaces", and actual project work. The rooms are beautifully appointed and full of electronics and even artwork. The tables are in a relatively stiff format. There spacious windows to the outside so you can dream about playing in the snow in the winter, or fishing on the river in the spring.

The challenge as the administration increasingly talks about learn, make and do is how to accomplish the applied or maker section. These beautiful modern classrooms do not make it easy for making things.

- Furniture is new
- Table tops are not whiteboard marker friendly
- There is no equipment (saws, knives, scissors, screwdrivers, glue guns, etc.)
- No materials (foam core, cardboard, tape, foam, glue colored paper, balsa wood etc.)
- No equipment storage places
- No facilities for cleanup.
- Classes are tightly scheduled (little time to set up or clean up).
- The classes are completely full, not an empty seat.
- The whiteboard space is in the front of the room.
- Trashcans are small, as the university is big on recycling — often difficult in a maker space.
- No safety training on box cutters, saws, hot glue guns etc.
- Atmosphere is of a classroom not a maker space
- Resource constraints of faculty and students on modeling or prototyping: time, money. energy and space to build
- Resource constraints in terms of supplies.
- Students work to live and do not have much extra for supplies
- Supplies can be expensive
- Students new to any of the innovation models do not necessarily know how cheap resources can be.

In the Design School in the author's city, they have several levels of labs equipped for making all kinds of models and the students understand the concept of model today and model again tomorrow. There is a room with foam core, balsa wood and other light substances, there are shops for wood and metal, there are materials and sewing machines, there is a three D printing lab, there are computers for designing and there is even a materials library.

How do you prepare the marketing student of today to lead team members like this? Industry colleagues suggest that often many prototypes are made. When you do not have the facilities to make one how do you make many? When teaching, Design Thinking the idea that you should develop several prototypes is emphasized. Starting with the simplest to more and more complicated models! Design thinking sometimes uses prototyping as

a method of creativity. How do you do this without resources?

For many years, the business school had small classes and the author would buy extensive supplies but when the classes were move to classrooms without storage and expanded in numbers of students it became unrealistic. What can you do? Today free resources are used to get the idea of simple modeling across.

2. Five Pieces of Trash

2.1 Learning Objectives

There are four major learning objectives with this creativity exercise. The first objective is increasing student's creativity. Hopefully you will help students to increase their ability to visualize new and different approaches. A second part of the creativity objective, is to help with relational thinking. A student needs a rocket launcher — some will see that the Pringles container is perfect. Others, will not be able to see the relation. Hopefully this exercise will help. Hands-on creativity, some students will flourish with the opportunity to use their hands as that is how they learn. The final portion of creativity, is to help students to learn the freedom to imagine, to shape, and to make. It is a real injection of energy for the creative process for young, adults, and old.

A second learning objective is the detachment from specific tools. Much as our culture, subculture, languages, and experience limit our ability to think about things, often people limit themselves to thinking about creating with the tools and supplies available. It is hoped that students will learn to detach themselves from their supplies, or the idea that they should feel limited. Imagination is a wonderful thing to encourage.

Illustrating that you can get into multi-dimensional space without high cost. Students, in a public university, are quick to say they have no money. With this exercise that is not a disability. Hopefully a take away is that you can model with almost anything. All students need is a little creativity.

In Design Thinking, prototyping can be done as a form of three-dimensional ideation, or to show to the segment of clients what you are thinking about. In business schools, usually we do not teach ideation by modeling. However, it is a powerful tool for ideation. It is also important to use with clients to test ideas.

2.2 The Exercise

Students are asked to bring in five pieces of clean trash for a specific class period. Do not tell the students the assignment for the in-class activity. You want them to look for interesting trash at their house or place of work without knowing how it might be used. Encourage students to bring tape, glue and scissors if they have them. You will be surprised how much they can and will contribute if asked. Especially if they have, some old tape or glue that they are not using. Students often in the days before the activity to be collecting and then brining the trash to class. If you live with roommates you may have to watch the trash like a hawk, if you want to rescue the cardboard roll from the paper towels. Students are used to grabbing their connective device and a backpack and not a bag of trash, reminders are important. Be a little creative and fun as a professor — "Trash Class today at 4:00 PM — admittance five clean pieces of trash!

When the students arrive in class, have them pile the trash on a common table or in a common spot. This is hard to get students to do, as they do not want to let go of their trash. You may have to explain that this is an important part of creative the process. If they hold on to only their trash, they are limiting the creative opportunity for themselves. They need to be free to think and not start thinking about how to use their trash. Letting go of their ownership to create a collective ownership is letting go of one restriction in their thinking or creativity.

The class leader or professor needs to bring in something to act as a base. Usually a piece of foam board works well, try buying the odd colors that may be on sale to encourage thinking that is even more creative. What do you do with a pink base, or a diamond-clad base? Other things that are useful to bring to the class meeting include: construction paper, glues (rubber cement, glue sticks, white glue, etc.) if they dry quickly, Post-Its, 3×5 cards, markers, straws, pencils and colored pencils, scraps of ribbon, wrapping paper, and so forth.

Preparing the room always helps. Depending on your furniture putting some groupings that will easily let the preassigned groups of five work. Know how you are going to get rid of the left-over trash at the end of the class period, in a dumpster or in big trash bags! Know what you are going to do with the items students make at the end of class. Know if and how you will grade them

Are you planning keep the physical models? Or, will you take pictures and ask each team to take a picture and send it to you. Estimate how long it will take to get the class room back into usable order for the next class.

Plan for time for room set up after or as students arrive:

1) Tables for the trash
2) Appoint a volunteer(s) to be sure trash gets on the table and not all over the floor and the room.
3) If there is to be some music in the background appoint a responsible student to handle that.
4) Save the bags in which the trash comes as they may help you in clean up.
5) Post in advance on your system such as Blackboard groups for the day so time is not wasted there.
6) Post a rough schedule on line so students know what to expect.

- 10 minutes to set up
    - Students in seats
    - Trash on table
    - Resources in room reviewed
    - Importance of sharing
    - Remind students with their own scissors etc. to put their name on it.
    - Making the in-class assignment
- 30 minutes of work time
    - Sketching
    - Reviewing resources
    - Selecting trash
    - Building
    - Adjusting
    - Iterating
- 20 minutes of sharing
- 10 minutes of clean up
- 5 minutes closing
    - Remind students to wash hands
    - Assignments for next class
    - Preserve your work with a photo.

In this description, it may feel like a bit of a rush but when you have forty students for an hour and fifteen minutes and you want to turn your classroom into a maker space things are going to have to move fast.

3. Making the In-class Assignment

If you can pick a general theme or assignment like the park, classroom, or lobby, of the future. It is great to pick a year five to seven years out and discuss some things that may change to get the creative juices flowing. This will permit you to assign teams to specific segments. For example, one of the author's favorites is Public Parks of the future and how should they look for different target audiences. Below are some of the target audiences that the student groups can choose from to build their parks. There are typically 40 in a class so 8 groups of five works nicely for this exercise.

1) Young children
2) Teenagers
3) Families
4) Seniors
5) Super Seniors
6) Disabled
7) Urban
8) Rural

Remind the students that they are to conceptualize a whole park like they might have in their town or neighborhood. They are to think about it five to seven years in the future. Writing this in 2017 the author would select 2025 as the year to be thinking about. Encourage your students to develop several activities for their target segment. It often helps the students in your class to think if you can reference family members like grandparents', younger brothers and sisters — or point out that they might be the ones taking their children to such a park. Encourage them to sketch, think, and then build. This is one of the hardest things for people to do. They need to let their imaginations run with a pencil first. Then when they have an idea, they can try to figure out how to communicate the idea. For some reason, students and seminar participants always want to rush to build. Even when confronted with a big sheet of paper on the table and a video showing sketching and then building, participants will often start build and just fold up the big piece of paper. It is quite possible that some people are more creative this way, but students and participants need to learn different methods.

Hopefully, after sketching the students will find inspiration among the piles of trash that you have in front of the room. It is always amazing how they can find just the right pieces after spending a little time in thinking about a challenge. Remember you are trying to open the mind and not close the mind. Give them a limited amount of time to model.

When the models are complete or time is up, let them explain the models they made. Encourage them to talk about why they selected what they did out of the trash. Encourage them to relate it to the theme. How does their model fit the segment they were assigned? Why is it built differently than for other segments?

The important thing is to get them to realize as you review the beautiful models that they took forty minutes or whatever you allowed and the primary resource was trash. This now sets a high expectation for their modeling.

- They have more time
  - They can select when they want to work in the daily cycle
  - They can select the work style that fits them the best.
    - Working within time segments, say 15 minutes at a time.
    - Project based-work until you are done

- They usually have more project space at home, their apartment, the dorm, grandpa's barn etc.
- They get to select their resources — even if they are on a severely restricted budget.
- They can select the people they want to help them whether family or friends.
  - This can be a great place for multiple generations in a family to help.
  - In the Latino community where they extended family is big there is real opportunity for excellent resources for modeling.
  - Remind them that their friends in art and design and engineering and fashion can help as well.

In work in industry simple models are often the hardest to get started. This becomes very applied as students get the idea of models can be made quickly and simply and then refined, or tossed out as you pivot into a new direction. Let them know 30 or 40 models and prototypes is not too many. Again, your challenge will be people locking in. The trash is supposed to help them to take more of a tinkerers approach to modeling

3.1 Suggested list for Protoyping

- colored craft paper
- cardboard
- foil wrapping paper
- cellophane
- envelopes
- fabric
- pipe-cleaners
- colored feathers
- felt shapes
- popsicle sticks
- toothpicks
- paperclips
- rubber bands
- twist ties
- old clips from bread bags
- bulldog clips
- plastic bags
- Velcro
- Blue tape
- Sharpies
- stickers labels
- letters
- numbers
- buttons
- ribbon
- plastic cups
- scissors
- glue sticks

- sticky tape
- stapler
- hole punch

4. Potential Challenges

There are a few potential challenges that you could run into. First, is unclean trash. I always suggest to the student(s) monitoring the trash table to throw away or let the author throw away anything that for any reason does not look safe or clean, reared, but a possibility. The greater challenge is students forget their trash items! The wise professor has a bag of clean trash from their home. A third, challenge is boring trash. Some students have boring trash and you as professor may have to see that they have wonderful imaginary things in their trash, if needed the author studies the trash and comes up with five things and uses some imagination. The Pringle's tube can be a super senior climbing tower, bungee platform, support for a zip line, circular apartments etc. The TV dinner tray can be a pool with different divisions, the butterfly garden, a roof to the amphitheater etc. This is a challenge for you to get people thinking and seeing the magic and not the trash. If students ask how clean is clean — child safe. If it has food in it, wash it well preferably in the dishwasher. If it is a cardboard, keep it clean. If it is carboard and had food in it such as the Pringles Tower wipe it out and let it dry.

4.1 Changes for the Future

Increasingly the author is intrigued with idea that modeling with restricted resources can lead to creativity. For example, recently at a workshop for college professors there were three modeling exercises in a row. One with bottles in which they had one three-liter bottle, thee ½ liter bottles three sheets of colored paper, tape, and string. A second modeling was done with a bag of supplies that included some colored paper, some popsicle sticks, some 4x6 cards, and a few other odds and ends. The third modeling was primary cardboard. What is interesting is how creative you can be to express something with comparatively few finite resources.

Steven P. Dow and colleagues discuss another aspect of this:

> Creating multiple prototypes in parallel can help individuals more effectively understand underlying design principles, enumerate more diverse solutions, and react less negatively to feedback. Distributing ones' psychological investment across multiple designs can reduce fixation and sunk-cost reasoning. Individuals may be more candid and critical of their own and others' ideas, resulting in more fluid and effective collaboration (Dow et al.).

If keeping models simple encourages creativity and change, it may be important to think about using this in classes. To do this you might want to use a suggestion of Waltraud Beckmann. In a rapid fired brainstorming, try three bags of different types of materials to see what kinds of creativity this will generate. For example, have them build three models on the same day: First out of empty clean water bottles, tape, and staples and scissors or some other material, second have them model the same idea using simple cardboard boxes in which groceries are delivered with some a strong tape and some colored sharpies, and third give them the pick of the trash that they have brought into class and let them build away. When all is done have them present all three rapidly. There are two main goals here one is to increase the creativity in modeling, and the second is to decrease the attachment to a model.

4.2 So How or Where do You Use This?

This was developed in a Creativity Class, but could be used in almost any innovation or new product development class where you are trying to encourage the Creative Process. In the author's universities in the states and internationally there are classes where this could be used all over the campuses. It fits particularly well if a university is also interested in sustainability as it is introducing the idea to the class room budget.

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Journal of Modern Education Review, ISSN 2155-7993, USA
December 2017, Volume 7, No. 12, pp. 841–847
Doi: 10.15341/jmer(2155-7993)/12.07.2017/002

http://www.academicstar.us

Integrating Socratic Seminar with Twitter in Teacher Preparation Courses

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Abstract: This paper examines the effectiveness of using Socratic Seminar combined with Twitter Technology in Teacher Preparation Courses to increase the Teacher Candidates' motivation, engagement, and pedagogy in content reading. This research occurs in two different courses in Delta State University's Undergraduate Elementary Education Program located in Cleveland, Mississippi. The instructor did not deliver the instruction through traditional lecture. The instructor uses an engaging teaching strategy called Socratic Seminar integrated with Twitter, a free online news and social networking service. This paper addresses the purposes and educational uses of Socratic Seminar and Twitter as utilized in this study. The researcher uses a Survey Research Design to identify whether students feel that they are more motivated and engaged in class discussion when participating in a Socratic Seminar integrating Twitter and whether this participation increases the Teacher Candidates' pedagogy in content reading. The findings from the analysis of the survey questions show that using Socratic Seminar integrating Twitter does have a positive effect on Teacher Candidates' motivation, engagement, and pedagogy in content reading.

Key words: Socratic Seminar, Twitter, motivation, engagement, pedagogy, technology

1. Introduction

This paper serves to accomplish two goals. One goal is to demonstrate to the Teacher Candidates a unique, engaging, and motivational teaching technique using Socratic Seminar combined with Twitter Technology (Socratic-Twitter Seminar) that the candidates can utilize in their future classrooms when they become teachers. The idea is to show the Teacher Candidates how effective learning can occur in a student-centered classroom discussion compared to a teacher-centered classroom lecture presentation through actual participation and demonstration. The second goal is to determine if the Teacher Candidates, after participating in the Socratic-Twitter Seminar, feel they are more motivated and engaged in class discussion, and in addition, if this participation increases their content pedagogical knowledge over a traditional lecture format.

2. What is Socratic Seminar?

The Socratic Seminar of teaching is based on the way Socrates instructed students in Ancient Greece. All of his students were encouraged and expected to share their thoughts regarding both the written and the spoken word. Socrates' students were provided materials to read, analyze, and evaluate prior to class so they could prepare to

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contribute to the discussion. During the class, Socrates would often remain silent to allow the students to share their knowledge.

Developed from Plato's Socratic Dialogues, the Socratic Seminar of teaching is a student-centered approach that challenges learners to develop their critical thinking skills and engage in analytic discussion (Coffey, n.d.). Tredway (1995) describes the Socratic seminar as "a form of structured discourse about ideas and moral dilemmas" (p. 26). Students are encouraged to make statements or draw conclusions about a topic and then question those statements or conclusions. Students work together in a group to examine the information from all directions and make decisions regarding whether their original ideas and beliefs are accurate. If the ideas and beliefs are not accurate, students use the information to draw new conclusions and test those ideas. Students continue in this manner until they are comfortable with the conclusion. This type of learning environment promotes inquiry, questioning, and critical thinking by bringing the students together to create ideas and solve problems.

According to Tredway (1995), the Socratic Seminar is a 50–80 minute discussion in which 25 or fewer students react to a novel, poem, essay, document, or art reproduction. Fischer (2011) extends the list of resources that instructors can use to generate discussion to include various texts, speeches, literature, experiments, music, and novels. Students engaging in Socratic Seminar generally sit in a circle and do not raise their hands to speak; instead, they make eye contact and observe body language in order to learn the cues for engaging in discussion. The Socratic Seminar can be used at any grade level and with all subject areas, and lessons can be adapted to fit a changing society (Coffey, n.d.).

The Socratic Seminar can effectively be used in classrooms to engage students and promote higher-level critical thinking. The students learn the content in a more meaningful way because they are required to apply their knowledge to a situation and be more active in the learning process. Not only is the method an effective learning tool, but it gives students practice working in groups to solve problems which is a valuable real-life experience. According to Tredway (1995), when Socratic Seminars engage students in active learning, they "develop knowledge, understanding, and ethical attitudes and behaviors, they are more apt to retain these attributes than if they had received them passively" (p. 26).

Socratic Seminars are characterized as a teaching strategy that encourages students to engage in critical thinking, listening, communicating, and wonder which allows students to determine the direction of the classroom discussion (Hertberg, 2006). Teachers serve as facilitators. An atmosphere of intellectual engagement, cooperation, and conversation is essential for students to learn the difference between dialogue and debate (Hertberg, 2006). The goal of the Socratic Seminar is not to simply answer questions, but to generate more questions leading to a boarder, deeper understanding of the learning. Socrates believed in the power of asking questions. He believed that we learned through responding to questions in a social setting. He prized inquiry over information and believed in discussion over debate (Filkins, 2017). Socratic seminars acknowledge the highly social nature of learning and align with the work of John Dewey, Lev Vygotsky, Jean Piaget, and Paulo Freire (Filkins, 2017).

3. What is Twitter?

Twitter is a free online news and social networking service that allows registered members to broadcast short posts called tweets that are restricted to 140 characters. (Rouse, 2015) Registered users can post tweets and follow other users' tweets, but those who are unregistered can only read them. A new user's account is automatically set to public so other users can interact with the tweets. Anyone can follow anyone on public Twitter. However, a

person can set the account to private.

Users access Twitter through its website interface or a mobile device app. Tweets can be sent quickly by cell phone text message, desktop client, or by posting at the Twitter.com website. To intertwine tweets into a conversation thread or connect them to a general topic, members can add hashtags to a keyword in their post (Rouse, 2015). The hashtag is expressed with the # symbol.

4. Procedures

This section describes the activities and routines that are followed to perform the Socratic-Twitter Seminar.

4.1 First Things First.

In order for the Socratic Seminar to be successful, the students need to understand the purpose of the discussion. The goal of the Socratic-Twitter Seminar is to help students gain a deeper understanding of the values, issues, and ideas in the text, and to actively listen, evaluate, and build on each other's comments. Beforehand, students are debriefed on the observation and scoring guides used to monitor appropriate behavior and learning during the seminar. In addition, the instructor assigns the text that will be discussed, and the students read and make annotations in the text. As they read the text, the students generate ten though-provoking, open-ended discussion questions that can be asked during the seminar.

The instructor divides the class into two groups, an inner circle and an outer circle, and assigns each student a partner. The groups or the instructor may select a leader to keep the seminar moving and on topic. Next, students are taught Twitter knowledge needed for the seminar along with the roles of the instructor, leader, and students. Finally, the guidelines for the inner and outer circles are discussed along with the schedule to be followed.

4.2 Twitter Knowledge.

In order to include Twitter in the seminar the following needs to occur.

- The instructor needs a Twitter account and a classroom hashtag.
- All students need a Twitter account and need to know the importance of the classroom hashtag.
- Students need to understand that tweets cannot be more than 140 characters.
- Students need to understand the expectations of what to tweet and how to tweet.
- Students need to understand the Twitter observation and scoring guides.
- Students need to understand the importance of online etiquette.

4.3 Role of the Instructor

The instructor serves as a facilitator, not as a director. The instructor can pose thought-provoking, open-ended questions, but in this study the Teacher Candidates created the questions. The instructor gives no response, negative or positive, to the students' discussion. The instructor relies on the leader to pose more questions to move discussion from stalemate positions if necessary. The instructor regulates the time and length of the seminar and adjusts the time allotment as needed.

4.4 Role of the Leader.

Each group has a leader which begins the discussion with an opening statement or question or the leader selects someone else to ask the first question. The leader listens carefully to all responses and clears up any confusion that is evident within the discussion. The leader is essential in helping the participants get back on track if they stray from the topic or begin to debate. The leader encourages collaboration so all participants work

together cooperatively. The leader does not dominate the discussion but keeps the conversation moving especially if it comes to a standstill.

4.5 Role of the Students.

The students prepare for the seminar by reading and annotating the text so they can have an effective discussion. The students pose thought-provoking, open-ended questions for discussion which allows them to direct the flow of the discussion within the seminar. The students determine the meaning of the discussion and construct their own analysis of the seminar by utilizing critical thinking, listening, and communicating skills. The students try to build on or challenge the ideas of others but respect and honor the opinions and voices of all other participants.

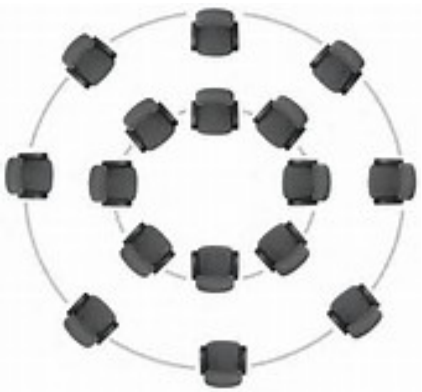
4.6 Guidelines for the Inner Circle Participating in Group Discussion

The inner group sits in a circle in chairs or desks, allowing all participants to see one another and make eye contact. Only students who have prepared for the seminar by reading the assigned text should participate in the discussion. If no student speaks at first, it is understood that silence is not a negative. Time is given to the students in order for them to generate their thoughts and allow discussion to flow on its own. Mutual respect between the students is key to successful seminars. Students never raise their hands and only one student speaks at a time.

4.7 Guidelines for the Outer Circle Integrating Twitter

Each person in the outer group sits behind their partner. This allows the student to see and hear their partner during the seminar. Each person in the outer circle monitors and records all responses made by their partner through observation and scoring guides and through posts on Twitter. The outer circle coaches their partner in the inner circle. The outer group comments on the inner circle discussion through Twitter. The students are assigned a class code using a hashtag so a running board of comments can be displayed in the class on the Smart board during the Socratic-Twitter Seminar. This provides the students with a way to continue the conversation through Twitter outside the classroom and serves as a review of the discussion for later conversation. The outer group may tweet questions, tweet comments, retweet comments, and tweet praises about the seminar or their partner's performance. After the seminar, all participants tweet one-word descriptions of the seminar, make comments to other students, and make closing statements as a means of reflection. When allowed by the instructor, the students post a GIF, emoji, or Bitmoji. Mutual respect is given to all participants through online tweets.

4. 8 Diagram of the Inner Circle and Outer Circle Socratic-Twitter Seminar



4.9 Socratic-Twitter Seminar Schedule for a 75-minute Class

The following Socratic-Twitter Seminar schedule is used for the 75-minute class period.

- The seminar begins with a 20-minute discussion.
- The instructor stops the discussion and allows partners to coach and talk to one another for two minutes.
- The seminar continues for 15 to 20 more minutes.
- The instructor stops the discussion and allows partners to coach and talk to one another for an additional
- two minutes.
- The seminar continues with 10 more minutes of discussion and a closing statement is generated by the
- inner circle.
- After the Socratic-Twitter Seminar, time is allocated for everyone to reflect on the experience, assess
- personal performance, and tweet responses about the seminar.

4.10 Closing Statement.

The students compose a closing statement during the final Socratic Seminar discussion. They develop their closing statement as a group. The instructor allows time at the end of the seminar for post-seminar reflection, assessment, and Twitter time. This reflection and assessment time is crucial to each student's individual analysis of learning.

5. Methodology

This small-scale research occurred in two different Teacher Preparation Courses in Delta State University's Undergraduate Elementary Education Program located in Cleveland, Mississippi. A total of 25 Teacher Candidates participated in the study. Fourteen Teacher Candidates were classified as seniors and 11 were classified as juniors. Twenty-two Teacher Candidates were females and three Teacher Candidates were males. Using a Survey Research Design, the researcher collected data on three questions from the participants.

Q1: Was the participant more interested and engaged in class discussion when participating in a Socratic-Twitter Seminar over traditional lecture?

Q2: Was the participant better prepared for class discussion when participating in a Socratic-Twitter Seminar over traditional class lecture?

Q3: Did participation in a Socratic-Twitter Seminar increase the participant's academic learning and content pedagogy over traditional lecture?

6. Findings

According to the student-completed survey, the majority of the students stated that they were more interested and engaged in class discussion when participating in a Socratic-Twitter Seminar over traditional lecture. They stated that they were better prepared for the lesson because they had to read and annotate the text and generate ten thought-provoking questions in order to participate effectively in a Socratic-Twitter Seminar. In addition, the students felt that participation in a Socratic-Twitter Seminar does increase academic learning and content pedagogy more than sitting in a class listening to instruction delivered by traditional lecture. The students that rated the three questions with an answer of no stated that they had failed to prepare for the Socratic-Twitter Seminar; therefore, restricting them from engaging and participating effectively in the discussion both verbally

and through Twitter. They further indicated that had they prepared for the Socratic-Twitter Seminar, they would have rated the questions with an answer of yes.

The student-completed survey data for the three research questions are showed in the chart below.

College Courses	Juniors				Seniors			
	Females		Males		Females		Males	
	Yes	No	Yes	No	Yes	No	Yes	No
CRD 325 – Reading in the Intermediate and Secondary School								
• Question 1	12	1	1	0	0	0	0	0
• Question 2	12	1	1	0	0	0	0	0
• Question 3	11	2	1	0	0	0	0	0
CEL 393 – Classroom Management in the Elementary School								
• Question 1	0	0	0	0	9	0	2	0
• Question 2	0	0	0	0	8	1	2	0
• Question 3	0	0	0	0	8	1	1	1

7. Conclusions

This paper examines a research study that was conducted in two different Teacher Preparation Courses in Delta State University Undergraduate Elementary Education Program in Cleveland, MS. The Teacher Candidates participated in an engaging and innovative Socratic-Twitter Seminar where they responded to thought-provoking questions about content reading and pedagogy through oral discussion and Twitter Technology. The students were divided into two groups, an inner circle and an outer circle. Each student had a partner. The inner circle participated verbally in discussion questions while the outer circle observed, took notes, and made tweets through Twitter on ideas and comments made by their partner or other participants. One student in each group served as the seminar leader and kept the group discussion flowing. Engagement, participation, challenges, successes, and lessons learned were addressed. This engaging and innovative teaching strategy called Socratic-Twitter Seminar can be adapted for a variety of grade levels and content areas.

The top three themes developing from this paper are:

1). During a Socratic-Twitter Seminar, the students are engaged in collaborative discussion, which increases active participation resulting in higher academic achievement of the content reading.

2). The students participate in real-world problem solving resulting in an increase in critical and creative thinking, which better prepares the students for life outside the classroom.

3). The instructor serves as facilitator and transforms the teacher-centered classroom into an engaging and energizing student-centered classroom integrating Twitter Technology. This change results in improved student engagement through reflective deep-seeded questions and answers.

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Journal of Modern Education Review, ISSN 2155-7993, USA
December 2017, Volume 7, No. 12, pp. 848–852
Doi: 10.15341/jmer(2155-7993)/12.07.2017/003

http://www.academicstar.us

The Impact of Activities on Language Learning: Fun in Summer Trip English Camp Case Study

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Abstract: Nowadays, more and more teachers use activities as part of their teaching to let students participate rigorously and bring about efficient learning experiences. It is believed that activities can provide varied experiences to students to facilitate the acquisition of knowledge, experience, skills and values. Activities can also build student's self-confidence and develop understanding through work in his/her group.

The present study aimed to explore the effect of activities on students' language learning. In February 2016, sixty questionnaires were distributed to the target students in a local middle school to find out their learning preferences and the topics they were mostly interested in before the camp. The lessons in the camp then were designed based on the result of the questionnaires which focused on using activities to guide students to learn Indonesian culture and food.

On the first day of the camp, students were given a pre-test to test how much they know about the topics throughout the lesson and were tested again on the last day of the camp to see how much they have learned. There were 24 questions on the test, in average students answered 12.5 questions correctly before the camp started and 16.5 questions correctly after the camp. The result showed that students have learned content through activities during the camp. In addition, interviews were conducted to all the camp participants at the end of summer to find out whether the content taught was useful for their summer trip in Indonesia and which part of the lessons they enjoyed the most. All the participants claimed that the lessons were very helpful to their trip and through activities they could learn more quickly and were more motivated during the lesson.

Key words: motivation, game based learning, activity based learning, learning community, learning preference

1. Introduction

1.1 Background of the Study

What is language? Why do we need to learn a language? Whatever we do when we come together, we talk. We live in a world of language. We talk face-to-face; hardly a moment of our waking lives is free from words.

According to Taiwan's Ministry of Education (2006), the purpose of the English curriculum in elementary and middle school is to develop English communication skills. Interestingly, in the past ten years of my teaching

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career, I have noticed that students who learn a second language, particularly English, in Taiwan still hesitate to speak the language. What went wrong?

It is a common perception that for most students in Taiwan the main goal of learning English is to get good grades and to pass school exams, therefore, if speaking is not part of the test, teachers and students would not spend much time and effort on it.

While Education system continues to reform, many teachers also strive to raise students' communicative skills in the language classroom through sharing teaching ideas and activities on social networks, such as Facebook, LINE or YouTube. These teachers believed that students should be able to apply the language in their daily life instead of memorizing the grammar rules and vocabulary. The present study aims to find out the answers to the following research questions:

1) How much time do middle school students spend on learning English per week?
2) When learning English, what would middle school students want to focus on the most?
3) What kind of activities they have experienced in their English class?
4) What are middle students' reactions toward using activities during the class?

2. Literature Review

The idea of blending activities in teaching is not new. Back in the late 17th century, Locke had pointed out that instruction is most effective when children enjoy it. Locke mentioned that children learn for the sake of learning, therefore we could teach them how to read letters and words through games (Crain, 2011, p. 11).

Activity method is a technique adopted by a teacher to emphasize his or her method of teaching through activity in which the students participate rigorously and bring about efficient learning experiences. According to Oja and Pine (1989), in an activity based teaching, learners willingly with enthusiasm internalize and implement concepts relevant to their needs.

The information processing theory in psychology views learners as active investigators of their environment. This theory is grounded in the premise that people innately strive to make sense of the world around them. In the process of learning, they experience, memorize and understand. Students need to be provided with data and materials necessary to focus their thinking and interaction in the lesson for the process of analyzing the information. Teachers need to be actively involved in directing and guiding the students' analysis of the information (Nunan, 1989, p. 11).

According to Nunan (1989), we need to distinguish between knowing various grammatical rules and being able to use the rules effectively and appropriately when communicating. As Breen (1984) suggested, with communication at the center of the curriculum, classroom activities which develop learners' capability to communicate with others begin to emerge (pp. 52–53).

3. Methodology

The study was conducted at a middle school in southern Taiwan. The participants were 60 bilingual club students, curriculum leader and two English teachers. The study was divided into three phases. The first phase was conducted in March 2016, which questionnaire was distributed to the students asking English learning background, experiences and views on learning through activities. The second phase was conducted in April 2016, interviewing curriculum leader and the two English teachers from the school about English class setting and their views on

using activities as part of their teaching. After analyzing teachers' and students' view, with curriculum leader's permission, a five-day camp was organized based on activities. The camp lasted from August 1st to August 5th. Lessons included food, interpersonal relationship, and culture in Indonesia. On the first day of the camp, a pre-test based on the content of the five-day lessons was administered and was administered again on the last day of the camp to see the differences. Throughout the five-day camp, various activities have been used in the lessons during teaching, such as the use of worksheets with questions for students to find the answers from the reading on their own to train their reading skills, field games, group discussions, drama and five-minute group presentation to let students introduce Taiwanese food and culture. The last phase was conducted at the end of August by interviewing all students who participated in the five-day camp after their visit from Indonesia.

Both qualitative and quantitative approaches were used during the data collecting process. Quantitative data include questionnaires and pre -post tests. Qualitative data include interviews with teachers and students, field notes from the lesson, videotaping the lessons and students' presentation performance.

4. Quantitative and Qualitative Results

4.1 Demographic Information

The demographic information for the present study was summarized from the questionnaire distributed to two bilingual club classes at a middle school in southern Taiwan. A total of 60 questionnaires were completed by student participants and collected during their classes. There were 25 males and 35 females who participated in the study. Among the 25 males who participated in the study, 14 were 7th grade and 11 were 8th grade. Of the 35 females in the study, 18 were 7th grade and 17 were 8th grade. Table 1 summarizes general information provided by participants in response to questions regarding their gender and grades.

Table 1 Participants' General Information

Gender	Grade		Total
	7th Grade	8th Grade	
Male	14	11	25
Female	18	17	35
Total	32	28	60

4.2 Learning Experience

In general, majority of the participants in the study have learned English for more than five years (See Table 2). As Table 3 shown, 90% of the students spent more than 3 hours on study English per week. Among them 17 of the 7th grader spent more than 5 hours on study English and there were only 6 of the 8th grader spent more than 5 hours on study English each week. This result implied that as students' grade get higher, they have more pressures from tests of other subjects, hence they might spent less time on study English.

Table 2 Participants' English Learning Experience

Grade	Experience				Total
	Less than 3 Years	3-5 Years	5-7 Years	More than 7 years	
7th	1	1	12	18	32
8th	0	1	9	18	28
Total	1	2	21	36	60

Table 3 Participants' English Study Time Per Week

Grade	Study time			Total
	2 hours	3-5 hours	More than 5 hours	
7th	4	11	17	32
8th	2	20	6	28
Total	6	31	23	60

As Table 4 shown, 65% of participants chose to go to cram school as part of their self-learning and the reasons they go to cram school varies, 10 out of 60 participants who go to cram school for the purpose of preparing for English Proficiency Test. 18 out of 60 students go to cram school either because their parents ask them to or they are interested in learning more English (see Table 5).

Table 4 Self-Learning in English

Grade	Self-learning						Total
	English TV Program	English Movie	English Song	English camp	Cram School	Others	
7th	1	3	1	1	21	5	32
8th	0	1	1	6	18	2	28
Total	1	4	2	7	39	7	60

Table 5 Reasons for Going to Cram School

Cram School	Reason					Total
	N/A	Enhance Oral Skills	English Proficiency Test	Grammar Practice	Others	
Yes	3	6	10	5	18	42
No	18	0	0	0	0	18
Total	21	6	10	5	18	60

4.3 Interview Results

According to curriculum leader, Mr. Lee, seventh and eighth grade students have three English classes in a weed and an additional flexible hour called International Education, which is taught by a foreign teacher to enhance their listening and speaking skill. Both Mr. Lee and Ms. Ni claimed that students lack of speaking skills, when it comes to speak English, they can only answer teacher's questions without further elaboration. However, Ms. Sang, who is the home room teacher for the 8th grade bilingual club students, stated that students have difficulty in writing more than in listening and speaking. In order to enhance the area that the students lack of, all three of them have different approaches, but they all tried their best to provide students more opportunities to practice English.

As for whether they would integrate activities in their teaching, both Mr. Lee and Ms. Sang stated that they would use 10-15 minutes of the class time to do activity because students enjoyed it. Due to time limitation and academic pressure, they can only use activities in the class when time is allowed and they have to be careful with class management, because students often get too competitive and would go out of control. On the other hand, Ms. Ni never uses activities in her class, she claimed activities are meaningless, because she doesn't think students would learn anything through activities, they just want to have fun.

5. Discussion and Conclusion

5.1 Research Question One

How much time do middle school students spend on learning English per week?

As the curriculum leader, Mr. Lee has mentioned that middle school students generally have 3–4 class hours of English each week at school. As Table 3 shown, 31 out of 60 students spent 3–5 hours study English after school and 23 out of 60 students spent more than 5 hours per week study English after school. This indicated that the participants in this study spent 9 hours in average on learning English per week.

5.2 Research Question Two

When learning English, what would middle school students want to focus on the most?

As Table 6 shown, 17 out of 60 (28%) students claimed that they need to focus more on their writing skills and 28 out of 60 (47%) students stated that they need to focus on grammar more so they could enhance their speaking and writing skills. More importantly, they could do better on the test.

Table 6 Areas of Focus

Grade	Improvement					Total
	Speaking	Reading	Writing	Grammar	Others	
7th	2	1	7	14	8	32
8th	0	2	10	14	2	28
Total	2	3	17	28	10	60

5.3 Research Question Three

What kind of activities they have experienced in their English class?

As we can see from Table 7, participants in the present study have experienced various activities during English class in the past. 39 out of 60 participants have played games (65%) during their English class, this is probably because games are usually easy to administer and would not take much time.

Table 7 Activities Experienced during English Class

Grade	Activity						Total
	Drama	Conversation	Group Discussion	Movie	Games	Others	
7th	1	0	4	0	25	2	32
8th	0	2	4	5	14	3	28
Total	1	2	8	5	39	5	60

5.4 Research Question Four

What are middle students' reactions toward using activities during the class?

As Ms. Sang and Mr. Lee have mentioned during the interview, students enjoy learning without pressure, they like to learn through activities. However, with the academic pressure, teachers and school administrators also have to consider students' achievement and performances, so the time spend on activities during class have to be limited.

Table 8 showed that 41 out of 60 students (68%) enjoyed playing games during the class. During the interview with the students, 59 students claimed that using activities such as playing games, watching movies, and

have group discussion helped them learn better, because they could have chance to learn from each other and corporate with each other. As Auston has stated, “through activities I could see the immediate achievement through teamwork, I could have more confidence and motivation to learn.” The only student who didn’t think that activity help her learn because she prefer to learn on her own and she believed that test score on the paper is more real than the rewards earned through team work.

Table 8 Activities Interested in during English Class

Grade	Interest							Total
	Drama	Singing	Conversation	Group Discussion	Movie	Games	Others	
7th	1	0	3	3	0	25	0	32
8th	0	1	1	3	5	16	2	28
Total	1	1	4	6	5	41	2	60

6. Conclusion

The participants in this study generally expressed positive attitude toward learning English through activities. They expressed how learning through activities could provide them more opportunities to use the language and more fun. As the pre and post test result show in Table 9, students’ performance have improved over the five-day camp learning through activities. Before the camp started, participants answered 13 questions correctly in average. On the last day of the camp, participants could answer 17 questions correctly in average. The result indicated that teaching through activities could also be effective on students’ learning.

Therefore, to become a global citizen and to comply with the English teaching objective set by the Ministry of Education, teachers should make efforts to structure the English class to meet students’ needs-that is to be able to use the language in their daily life rather than prepare them for the test. The results from the study have showed with careful planning, integrating four skills in language class can be beneficial for both teachers and students.

Table 9 Pre and Post Test Result

	N	Min.	Max.	Mean
Pretest	23	8	17	13.00
Posttest	23	11	22	17.04

7. Limitation of the Study

This study has its limitations. First, it is possible that some information was not covered in the interview. Second, the role of the interviewer may have affected the results and how the students expressed their attitudes and feelings during the interviews. Although this study concerned only one middle school in southern Taiwan, the results may shed lights on the effect of integrating language skills through activities in students’ learning.

8. Acknowledgments

The completion of the study is dedicated to the help and support of Fushan Junior High School in recruiting the students to participate in the camp, providing teaching facilities and resources, and collecting the data.

Additional thanks to the Department of Foreign Language Instruction for providing the opportunity to conduct the research.

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Journal of Modern Education Review, ISSN 2155-7993, USA
December 2017, Volume 7, No. 12, pp. 855–863
Doi: 10.15341/jmer(2155-7993)/12.07.2017/004

http://www.academicstar.us

Remediation in EFL Challenging Context

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Abstract: It is a known fact that English Language Education (ELE) in educationally backward countries is based on approaches and theories from outside the context. These approaches cannot solve their problems, which are local, specific and need to be solved through indigenously developed approaches and methods. Quick Rising Activity (QRA) is an example of indigenous solutions that best suit classless context because these activities raise the students' writing skills in a very short period. This paper presents how these activities are designed and administered. The study starts with the a critical review related to the need for indigenous solutions to remedy the context, with reference to teaching and learning English in difficult circumstances, low-proficiency and classlessness. A field survey follows with using various methods/instruments for data collection. Based on the results of the two surveys, the activities are designed and tried out with a group of volunteering students in Najran University 2017. The results show the students, who lack the basics of writing and have wrong learning strategies, overcome these problems through the remedial activities designed.

Key words: remediation, classlessness, indigenous approaches, English language education, low-proficient learners.

1. Introduction

There are two major problems faced by EFL context in educationally backward countries namely low-proficiency and classlessness (Das & Almekhlafy, 2012). These are necessary fall-cuts of economic, social, and other problems. As appropriate solutions to these twin problems have not so far been found out, the number of low-proficient learners in a class is on increase making the class classless. One of the important assumptions of any system of education is the existence of classes. Accordingly, syllabuses, materials, methods and evaluations are designed for each class and level. However, the presence of low-proficient learners, in a great number and wide range of abilities in a class, make the class classless.

As these twin problems (low-proficiency and classlessness) are local, specific, and common to EFL situations/contexts, outside experts will be of no use. In other words, these problems are indigenous and need indigenous solutions. The present study presents one of these indigenous solutions focusing on one of the language skills, which is writing skill as the corner stone of the language profanely.

Although there is no one-size-fit-all solution for such complex problem, the study attempts to design remedial writing activities that can suit students with wide range of abilities exist in one class. Quick Rising Activities (QEA) can play a vital role since these activities raise students' skills and competence in a very short time.

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2. Why Remediation?

Remediation is seen as a cure for either little learning, no learning or wrong learning. It rather helps low-proficient learners gain the basic skills to pursue their higher studies. Soliday (2002) determines the role of remediation stating that remediation proponents suggest that the course help underprepared students gain the skills necessary to excel in college and may serve as a tool to integrate students into the school population. Similarly, it is reported that the role of remediation after secondary school had become important to policymakers, educationists, institutional researcher, and universities (Soliday M., 2002; Bettinger E. P., & Long B. T., 2007). These studies and others confirmed the effectiveness of remedial programs to enhance learners' proficiency (Bettinger E. P. & Long B. T., 2009).

Moreover, Chang C. S., Liu E. Z. F., Sung H. Y., Lin C. H., Chen N. S. and Cheng S. S. (2014) asserted that remedial teaching is established to cover to the needs of students who are unable to cope with the class in a normal classroom. They are typically perform at a lower than average level due to learning or learning related problems. Thus, the major objective of remedial teaching is to equip the low-proficient learners with necessary skills that they could not by way or another acquire in normal classes.

3. Challenging Context: Low-proficiency and Classlessness

The two problems mentioned above (i.e., low-proficiency and classlessness) make the context difficult to remedy. The consequences of these two problems are also unmanageable. Therefore, immediate and indigenous solutions should be suggested and practiced otherwise the context will be more complex.

Although the remediation placement exam taken when first arriving on campus has become the key academic gate-keeper to postsecondary study in US Universities (Bettinger E. P. & Long B. T., 2009), the newcomers in some of Saudi Universities join the Preparatory Year Program (PYP) without appearing to any exam. Therefore, the class includes students of very wide range of abilities. The Preparatory Year Class in Najran University is an example of such "classless" context.

To male picture clearer, in Najran University, to join a college the students have to pass one year in PYP. They are placed in English classes regardless of their proficiency level. When officially in the PYP class, the students' skill-wise normally belongs to different classes. Unfortunately, these students with these big gaps in English proficiency are taught with same materials and methods. Consequently, this basic fact makes teaching totally deficit and teaching has failed to achieve any learning dividend in the learners. Thus, remediation comes to the surface and hence PYPs should overhaul the remedial program, so that it tackles the difficult context.

Moreover, these students know that they are low-proficient and they do not belong to the class so far their proficiency is concerned. This fact negatively affects their self-concept/efficacy. Therefore, the consequence in that some of them become totally dependent on their classmates who are high-proficient. Some of the students drop out of the PYP because staying in a class with the feeling that one does not belong to the class is difficult. Some of the students just hang on (of whom the researcher calls in-college dropouts) without participating in the activities of the class. What adds fuel to the fire is the wide range of abilities among these low-proficient learners.

4. Methodology

Data were collected from 30 EFL Saudi students enrolled at the Preparatory Year, Najran University, Saudi

Arabia. The participants' age ranged from 19 to 23. All of the participants were male students. The absence of female students in this study was because of the educational system in Saudi Arabia does not allow coeducation. In this context, female students study at different campuses. Therefore, it is difficult to find out female participants.

The participants were chosen based on the class-observations and the analysis of the FMT (First Mid-term Test). Those who have low level and problems in writing skills, they are invited to join the remedial classes. The researcher invited 10 out of the 30 students to attend the remedial classes.

The teacher/researcher used an observation checklist to record the events, in classrooms, in a systematic and effective way. A special kind of observation sheet referred to by James (2001), Scrivener (2005), Wajnryb (2008), Burns A. (2011) was used. The checklist was designed carefully to record in notes what the researcher considered as relevant to the objectives of his study. The pre-preparation of the checklist helped the researcher record the required information and events easily and quickly. The sheet consisted of different headings. Each heading covered one aspect of the observation foci and objectives. Some of the information needed in the checklist could be collected before or after the class that helped the researcher to record the rest of the events and activities carried out in the classroom.

Further, individual and group interviews were conducted after the experimentation. Some pre-prepared guide topics were prepared for the purpose. These guide-lines helped the researcher stick to the main purpose of the interviews and to analyze the data systematically (Burns A., 2011).

Finally, the experimentation of the activities represents the core of the study, which crystallizes the study as an action research, which methodologically undergoes the diagnostic the mixed mode approach depending on the statistical analysis of the FMT results and the classroom observation findings. The teacher/researcher made use of photographs as one of the observational techniques in collecting data. Photographs, by the researcher focused on classroom activities and students' sample of answers.

5. The Preliminary Survey Results

5.1 The FMT Analysis

As mentioned earlier the teacher/researcher starts the study with class-observation and FMT analysis. The answer scripts of 30 students, who got low marks in writing exam, are precisely analyzed. A rubric was prepared by the researcher to make the evaluation of the papers reliable and consistent. Some of the results are summarized in the following Table 1.

Table 1 Mistakes in the Conventions of Writing Skill

Rubric to Evaluate the Conventions of Writing Skill	Handwriting (legible, good spacing, alignment)	Capitalization (Begin sentences with capital letter)	Spelling (almost all words spelled correctly)	Word-order (put the words in the right order in a sentence)	Subject-verb Agreement (verb should be either singular or plural according to the subject)
Students No.	25	28	30	17	30
Percentage	83%	93%	100%	56%	100%

It is found that the targeted students lack basic skills of writing. The majority of them committed mistakes in the conventions of writing which are the surface features of writing skill (Cali K. & Browen K., 2007). They, who come from school, after nine years of learning English, find difficulty in writing simple sentences in English. See

the sample

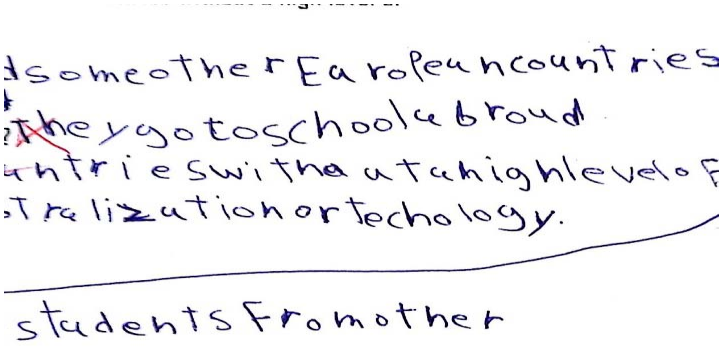

Figure 1 Sample of Students' Writing

From the above example, it is clear that the student has problems even in the basic skill of writing which is handwriting. Moreover, there is a lack in the skill of forming the letters, word boundary, etc. which students should have studied in their early school levels. Consequently, they need immediate remedial classes.

5.2 Classroom Observation Findings

As mentioned earlier, the teacher/researcher used an observation sheet to collect data about classroom settings and to make the observation manageable.

Some of the targeted students were studying writing in different sections, so the teacher/researcher had to observe about 20 writing classes of other teachers. The focus of the observation was on weak students. The results show the wrong or inappropriate learning strategies used by these students. The results are summarized in the Table 2.

Table 2 Wrong Learning Strategies

Wrong Learning Strategies	Learn By Heart	Writing Before Thinking	Dependent
No. of Students	22	27	21
Percentage	73%	90%	70%

The above table shows some of the wrong learning strategies. Firstly, the students memorize everything mindlessly and reproduce them in the paper. In other words, they mug up things without understanding. Secondly, they write without giving themselves time to think and prepare for what they are going to write. Finally, they become dependent on either teacher or their high-proficient classmates.

6. The Description and Experimentation of the Activities

There are many common challenges that may face teachers who conducts remedial classes/courses. On this regard, Tzu-Ching (2007) reported that the choice of the materials and methods that must be chosen to suit students' needs and motivate them to learn. Moreover, the writer recommended that classroom management should give students power and potential to change their learning attitudes and give them the sense of security in class to share and participate actively in the classroom activities. This should be taken into account because students' negative attitudes and motivation towards learning make classroom management difficult and ultimately make students pay no attention to the remedial course. Besides what mentioned by the above researcher, the teacher/researcher has limited time aiming at enhancing the students' proficiency, who are of multi-levels, in

English in that limited time. As mentioned in the introduction of the study, the gaps among these students are very big, which makes the class classless.

Therefore, a suitable activity for all of the students should be used. Additionally, QRA (Quick Rising Activity) was appropriate to such a situation. It was better not to always keep the students in low level; otherwise, they can feel frustrated and even humiliated (Kundu M., 2015). Therefore, the activity was designed in such a way that the students started with generating words and ended with composing poems and writing paragraphs. See Figure 1 below.

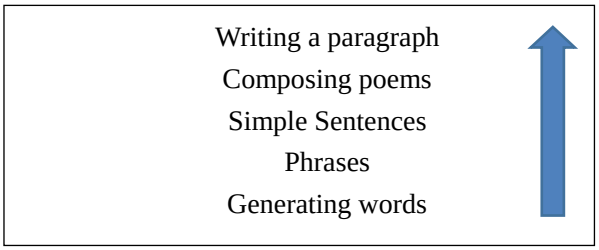

Figure 1 QRA (Quick Rising Activity)

The students stormed their brains to generate words about rain, like this:

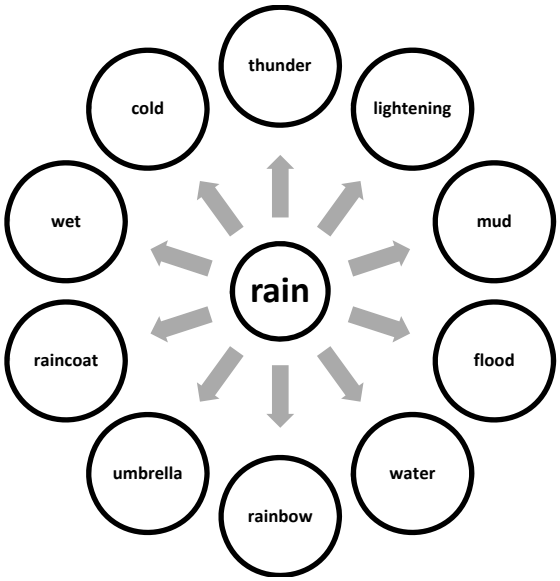

Figure 2 Brainstorming about Rain

In this stage of the activity, the students were very active as the BS encouraged creativity and generated many words quickly (Yusef G. A., Haj A. M., Kundu M. & Satpathy G., 2016).

Those words were developed into simple sentences. The students followed the structure and developed many other sentences from the words above. This type of activities are not fully controlled and guided. The students are given the chance to think and create some other new sentences. The advantage of such type of activities is to provide learners with the language they need to complete the task. Though they are described as old and traditional practices, they still considered as an effective tool in helping learners put words down in paper (Elturki E. & Shaman S., 2013). In addition, they build learners' confidence, as they do not commit mistakes. Controlled practice can still be meaningful despite its limitations.

Then, a simple four-lined poem was written on the WB and the students composed similar ones, see the

sample:

Rain causes lightening.

Rain causes thunder.

Rain causes rainbow.

Rain causes water.

After that, the students used the prompts given by the teacher/researcher and composed their own poems. The poem was used as a scaffolding for writing poems which can help them develop an inner compass to discover their own creativity, self-motivation, and emotional intelligence needed for learning and living (Yusef et al., 2016). It is semi-controlled but it enhances creativity among the students by writing poems (Pflaum J., 2016). One of amazing composed ones could be observed through Figure 3.

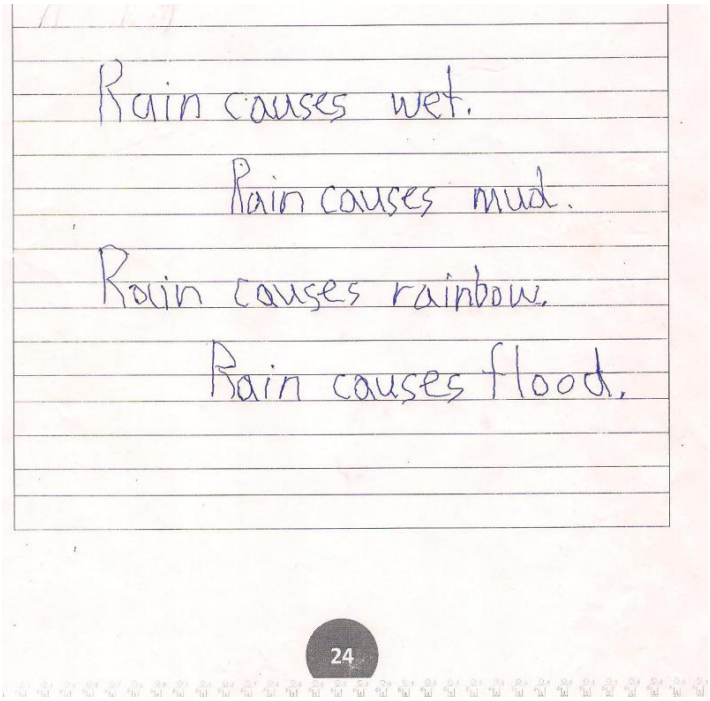

Figure 3 Sample of Student Performance

This was interesting and motivating and it was the first time for the learners to write in English without committing mistakes. Therefore, this creative technique broke the wall of despair. After the experimentation, One of the interviewees commented on this issue in the below excerpt:

"I never thought that I can write poems in English."

"English is not difficult."

In both sentences, it is obvious that the activities changed the attitude of the students towards English language. They felt confident that they could speak and write in English, which was our main goal of the remedial activities.

7. Findings and Discussion

The responses from the target learners are overwhelmingly positive. The interviews, experimentation, and observation data are also encouraging. The analysis of the target students answer scripts in the SMT shows the

progress the students achieved in a very short period. Besides, through the data, it could obviously be elicited that the students have overcome the problems they had in the basics in writing. Table 3 provides more insights on this point.

Table 3 SMT Students Scripts Analysis

Conventions of Writing	Handwriting	Capitalization	Spelling	Word-order	Subject-verb Agreement
No. of Students	2	0	4	4	3
Percentage	20%	0%	40%	40%	35%

The table above gives a clear picture of the quick progress achieved by a total of ten students who attended the remedial writing classes. This progress minimizes the gaps among the students in the same class.

Beside achieving the main goal of the study which tends to enhancing the proficiency of the targeted students in writing skill, and changing some of students' wrong strategies of learning, the study comes up with the following results and findings.

7.1 Remediation is Difficult

Helping someone learn what he/she has not learned from previous teaching is always easier than helping unlearn what he/she has wrongly learnt. It is still much more difficult if someone's wrong learning has not been corrected over months and years and the wrong learning, it is needed to know the causes of wrong learning. This requires teachers' active involvement and deep knowledge in the subject. Observing closely to help someone learn what he/she not learned from previous teaching is also not an easy task. If he/she has not benefited from previous teaching, there is no guarantee that he/she will learn if re-taught him/her the same thing in the same way. In order to help him/her learn, one should know the causes of his/her wrong learning from the previous teaching and accordingly reframing and redesigning the methods of teaching is necessary. That stage of the experimentation revealed to the research how remediation was a difficult job.

7.2 Wrong Teaching behind Wrong Strategies

Looking precisely at the study results, it could be elicited that most of learner-related problems are system-related ones. Based on the field survey, particularly, classroom observation and experimentation, it is found that the students while doing writing activities, they do not think before doing such activities. This wrong strategy in learning English is the result of following the teacher-centred approach where teachers explain and talk and students passively listen. They never check whether the students understand them or not or even whether the students really listen to them or not. In most cases, the students have to copy mindlessly after the teachers. Therefore, the students are not given any chance to use their minds or to think.

Furthermore, the students depend totally on memorization in their learning of English. They mindlessly memorize everything and reproduce them in their exam papers. They mug up everything without understanding and reproduce them in exams. This is mostly the result of difficult tasks and tests. Students, therefore, develop a survival strategy to get through the tests. Thus, most of the learner-related English problems are system-related.

7.3 Indigenous Approaches to be Applied

Several approaches of teaching used for teaching English are based on a very western idea of what constitutes "good" learning. These approaches and teaching methods are not suitable and appropriate in many contexts. What is suitable to a group of learners cannot be certainly suitable to another. The diversity of local culture, urban/rural, etc. makes it difficult to apply the same methods of teaching to all groups. Rather, one should

employ the teaching methods that are culturally sensitive and productive and suit the learners' educational beliefs (Haj A. M., Yusef G. A. & Kundu M., 2016).

For example, the approaches and methods such as QRA, which go well with the proficiency, culture, and educational beliefs of the learners, proved very effective in enhancing their proficiency in English. These activities make learners generate many words in interesting ways and feel confident that they know many English and there is nothing to fear in learning English. . To quote some of them,

"I feel that what I learnt here is more than what I learnt in the previous courses … Our friends who could not participate in this course missed a lot."

It is the first time for them to feel engaged in learning English, which breaks the wall of despair. The focus is on the process not the product. This helps gradually to build their skills of writing. They transfer smoothly and easily from one step to another. Each step builds the confidence of the students to do the next one. In addition to that, the activity is semi-guided and controlled. This gives them no chance to commit mistakes. Thus, they, for the first time, write in English without committing mistakes.

7.4 Limitations

Every study is bound to have some limitations and many of them must bind a study in remediation. Some of these limitations are;

1) One month for the experimentation was not typically enough to enhance the learners' proficiency in English. The duration was very short to bring out a positive change in them. In addition, the students had no enough time to attend all the remedial classes, which hindered the study fast progress. Many activities and lessons could not be made due to limitations of time.
2) The researcher found difficulties to experiment the activities with larger number of students due to financial problems. The results would be better if tried out with participants in different places and contexts.
3) The teacher/researcher found difficulty to find research in the same area (teaching/learning in challenging context).

7.5 Recommendations

Based on the researcher's experience gained through the study findings, the following recommendations can be offered for further research in the area.

1) Studies of this type, which involve extensive fieldwork, material evaluation, material production, tryouts, teaching and field visits, could be carried out by a team of researchers over a longer period.
2) The study was confined to one area in Saudi Arabia. Similar studies could be conducted with other localities.
3) The study was confined to ELE. Research of similar kind could be conducted in the teaching/learning in other subjects.

8. Conclusion

The problems of ELE in the study context and places with similar circumstances are unique and special arising out of their socio-economic and cultural make up. These problems are restricted to the educationally backward areas (not merely confined to English but to all subjects of study). Therefore, one cannot expect western

experts to solve these typical problems in these areas primarily due to the fact that the western context is totally different from our context. The former teaches/learns in comfortable circumstances and the later teach/learn in difficult circumstances. Thus, we have to find solutions to our indigenous problems and these solutions should come mainly from the grassroot practitioners. One example of these solutions is QRA.

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Journal of Modern Education Review, ISSN 2155-7993, USA
December 2017, Volume 7, No. 12, pp. 864–875
Doi: 10.15341/jmer(2155-7993)/12.07.2017/005

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What Metaphors Can Tell in Today's Digital World to Interpret Reality in "Pinterest"*

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Abstract: In the last decades, the Internet has had an enormous presence in the communication field (forums, e-mails, chats, social networks, etc.). This fact has had an exponential impact on the academic and linguistic fields, since today's digital world has instigated researchers to investigate users' interaction with digital genres (i.e., "Cybergenres") (Shepherd & Watters, 1998). In the field of linguistics, recent works (Navarro, 2008; Navarro et al., 2008; Navarro & Silvestre, 2009; Girón-García & Navarro, 2014; Girón-García & Navarro, 2015) suggest that digital navigation patterns may be guided. However, there is not much research done on the role of semantic frames and metaphors (Porto, 2007). For this reason, we aim at studying the role of semantic frames (Fillmore, 1982, 1985) and metaphors (Lakoff, 1992; Steen, 2007) in the configuration of coherent Cybergenres. Accordingly, the present study consists in: (a) Analyzing the most frequent lexical units in the social network "Pinterest"; and (b) Showing and outlining the semantic frames that these lexical units depict. We identify several terms such as search, boards (create board, create secret board), pins, save pin (like, send, tried it, read it, get more pins from), likes, followers, following, etc.), in "Pinterest" following these steps considering MIP: Firstly, we establish the basic and contextual meanings of the terms. Then, we describe the semantic frames of both basic and contextual meanings. Finally, we define their frame elements by establishing if the contextual meaning contrasts with the basic meaning and can be understood by comparison with it; should this be the case, do we consider a term to be metaphorical. To conclude, the expected results help to unravel the role of metaphorical frames as knowledge configurations that provide coherence to cybergenres per the lexical units considered.

Key words: Pinterest, lexical units, literal and contextual meanings, semantic frames, metaphors, script

1. Introduction

The present study results from the confluence of different research lines developed by the GReSCA Group (Grup de Recerca en Semàntica Contrastiva i Aplicada) at "Universitat Jaume I" (UJI).

The Internet is significantly impacting the linguistic field and although a lot of work has been devoted to studying and analyzing language on the Internet, recent works propose that metaphorical models may guide digital navigation patterns in our conceptual system (Navarro, 2008; Navarro et al., 2008; Navarro & Silvestre, 2009; Girón-García & Navarro, 2014).

* This study has been possible thanks to financing from "Pla 2014 de Foment de la Investigació de la Universitat Jaume I (UJI)" (Ref. P1.1A2014-02) and IULMA (Institut Interuniversitari de Llengües Modernes Aplicades) at Universitat Jaume I.
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Along this line, the aim of the present study is to outline and describe the conceptual frames evoked by the most common lexical units found in the social network "Pinterest". Furthermore, we aim at examining and analyzing the roles of those frames through the identification of lexical units and/or expressions as metaphorical. With this process, we will be able to identify the different cognitive models that are activated in our mind to understand how to interpret webpages such as "Pinterest".

2. Cybergenres and ICMs

The present study aims at making evident that, semantic frames and metaphors are relevant in the configuration of coherent Cybergenres (i.e., digital genres) (Yates & Orlikowski, 1992; Shepherd & Watters, 1998). Then, reading digital genres has served as evidence of being a cognitive (mental) process where users give meaning to digital environments through the implementation of previous knowledge. Furthermore, users may perceive a digital environment to have very different content organization and structure compared to the traditional paper format. For this reason, we think that being aware of metaphorical models and expressions in the construction of digital genres may help to understand their role in "Pinterest".

Regarding Idealised Cognitive Models (ICMs), these cannot be understood without referring to terms such as "Frame", "Domain", and "Script". Experts in the field of semantic frames such as Fillmore (1982), Gawron (2008), or even Ruppenhofer et al. (2010) have portrayed numerous definitions for this notion. The latter (Ruppenhofer et al., 2010, p. 5) has probably provided the most specific definition, considering a frame as "a script-like conceptual structure that describes a particular type of situation, object or event and the participants and props involved in it".

Compared to that definition, the notion of frame that we suggest for the purpose of this work is that

> "a conceptual frame is a schematic human knowledge configuration in long-term memory that represents a prototypical situation type, object or single event, where concepts may be more or less central or peripheral and can be characterized either as participants or props, where each participant concept has a semantic role, which allows for perspectivization. The meaning of a word cannot be understood — or known at all — without comprehension of the whole semantic frame it evokes, so that the semantic frame is necessary to the meaning of the given lexical unit" (Esbrí-Blasco & Girón-García & Renau, in preparation).

Hereafter, frames are part of a larger cognitive construct called 'Domain'. Previous researchers (Langacker, 1987; Kövecses, 2010) have offered vague definitions for these notions (frame and domain), since their descriptions were neither concise nor precise. Accordingly, we understand cognitive domains as conceptual constructs or configurations that comprise (all) the concepts related to a particular area of human experience or human knowledge. That area may vary in its complexity but cognitive domains include the different prototypical situation types (frames) that humans share about that domain of experience. Thus, cognitive domains are not equated to frames, but they consist of frames and their frame constituents, as well as frame sequences — i.e., scripts — and frame settings — reflected as scenarios (Esbrí-Blasco & Girón-García & Renau, in preparation).

Finally, the term "Script" is relevant in this study because our interest lies in the fact that some structural patterns may occur only in the Literal meaning of the lexical unit analyzed, or whether we may find out a repeated pattern in the Contextual meaning. Therefore, we may understand the notion of "Script" as sequences of frames that might occur in a particular situation, and not as a type of frame or domain.

3. Metaphorical Models in Virtual Environments

Idealised Cognitive Models (ICMs) are understood in terms of prior knowledge shared by a cultural community. "Prior knowledge" and "Shared knowledge" are two important notions in understanding metaphorical ICMs; because if users of virtual environments share previous knowledge with others, then, shared knowledge becomes well-structured and built into conventional models, which at the same time are based on social and individual experience (Navarro & Silvestre, 2009; Girón-García & Navarro, 2015).

The connection of a human being and the virtual context would not be meaningful unless conceptual metaphors (i.e., Metaphorical models) give a set of coherent structures grounded on previously unknown realities that are needed for the understanding of domains that have not been previously experienced or domains that do not allow for physical experience (i.e., Virtual Domains). As a result, our use of Internet materials and resources (Target Domain) would not be possible without those cognitive domains from previous experience (Source Domain).

Following from this, we intend to outline source domains (i.e., "Literal Meaning") that map onto the target domain (i.e., "Contextual Meaning"). Therefore, we highlight the fact that Internet users are not conscious of the systematicity of mappings involved in these two domains.

Our study tries to shed some light on the awareness that certain patterns or structures from the literal meaning might map onto the contextual meaning. For this reason, it is not possible to talk about the "website domain" without turning to the usual linguistic expressions that express the existence of the metaphorical models that constitute our analysis.

4. Methodology

To develop this study, we followed three steps: (1) Selection, (2) identification, and (3) consideration of a lexical unit as metaphorical or not.

(1) The first step we carried out was the selection of the most common lexical units — a set of word senses or lexical units — and collocations in the Target domain that fulfill a guiding function in the use or understanding of the social network "Pinterest". At this point, we consider the notion of lexical unit[1] by Steen et al. (2010) as a word, polyword or compound adding the word sense (one of the various senses of a polysemous concept, which evokes a particular semantic frame) as stated by Fillmore (1982). A lexical unit may be polysemous. In this sense, the terms "lexical unit" and "concept" are synonymous, since its form is a word, polyword or compound (Steen 2010). Furthermore, a lexical unit may belong to a semantic frame, i.e., words that evoke and depend on a specific conceptual context associated to individual frames (Fillmore & Baker, 2009, p. 321).

After the selection of a lexical unit, we look for the meaning of each term in four well-known on-line dictionaries: Macmillan (http://www.macmillandictionary.com/), Cambridge (http://dictionary.cambridge.org/), Oxford (http://www.oxforddictionaries.com/), and Merriam-Webster (http://www.oxforddictionaries.com/).

Once we have extracted all the common definitions of each lexical unit from all four dictionaries, we propose the "Literal Meaning" (our own definition of the lexical unit). Then, we establish the "Contextual Meaning" (in the virtual context, "Pinterest") of each lexical unit based on the definitions found in the "Pinterest Guide"

[1] In this study, we understand a lexical unit as a word or linguistic expression rather than each of the different meanings a word may have, which we call senses.

(Business Best Practice Guide, http://business.pinterest.com/sites/business/files/best-practice-guide-en.pdf) and "A Guide to Pinterest" (https://help.pinterest.com/en/guide/pins).

(2) The second step we followed was the identification of the metaphorical units in order to structure the virtual environment, in accordance with the Pragglejaz method — The "Metaphor Identification Procedure" (MIP) (Pragglejaz Group, 2007; Steen, 2007), renamed by Steen et al. (2010) as "Metaphor Identification Procedure VU University Amsterdam" (MIPVU). Finding metaphor in language by MIPVU involves applying a substantial set of specific and precise rules while using the dictionary. This helps increase agreement, or show where/how/why disagreement arises and can be discussed. It is moreover an operationalization of a set of theoretical assumptions that is well motivated and can be discussed as such. The MIPVU procedure follows a set of steps: (a) Find local referent and topic shifts; (b) test whether the incongruous lexical units are to be integrated within the overall referential and/or topical framework by means of some form of comparison; (c) test whether the comparison is non-literal or cross-domain; (d) test whether the comparison can be understood as some form of indirect discourse about the local or main referent or topic of the text; (e) finally, if the findings to tests (b), (c), and (d) are positive, then a word should be considered metaphorical.

(3) The concluding stage in our study is to examine the specific lexical unit in both contexts (Literal and Contextual) considering Fillmore's (1982) semantic frames, in order to determine whether the lexical unit is metaphorical or not. Finally, we consider all the core elements in each frame comparing them individually and if both frames contrast, then we contemplate this lexical unit as metaphorical. It is relevant to highlight that we select relevant lexical items — a set of word senses or lexical units — in the target domain that fulfil a guiding function in the use or understanding of the virtual site (Navarro, 2008; Navarro & Silvestre, 2009; Girón-García & Navarro, 2014).

In this work, the procedural analysis is to identify each word sense and the frame it evokes in the virtual environment ("Pinterest"). Then, we compare the Literal and Contextual meanings regarding the definitions taken from the dictionaries. Finally, we have to make a decision in terms of metaphoricity, which depends on the comparison established between the semantic frames evoked by the lexical unit in both situations (Literal and Contextual). The literal meaning is built taking into account the definitions from the dictionaries and its frame, based on previous knowledge/information and provided by our "Pinterest" domain. Finally, we describe the prototypical sequence ("Script") that each lexical unit evokes.

5. Pinterest Results

We have analyzed some of the most remarkable lexical units from Pinterest: "board", "create board", "pin", and "save". Accordingly, (1) we have described their contextual and literal meaning in each individual frame (literal and contextual), (2) outlined their frame (literal and contextual), (3) decided whether the lexical units selected are considered metaphorical in the contextual virtual space, and finally (4) described the script each lexical unit represents.

With regard to the definitions looked up in the four dictionaries, contextual and literal meanings are proposed.

5.1. Board

Concerning the Contextual meaning of the lexical unit "Board", a board is a place where you show your brand's personality and taste. You may have a clear profile image, a quick description and a creative board name

on it, so as to help people understand what your brand is all about. By doing this, you can inspire people to follow your boards and help you show up in searches. In contrast the Literal meaning of 'Board' could be defined as follows: "A flat wide vertical surface, frame or device such as a noticeboard or blackboard placed upright on a wall on which notices can be written/fixed/pinned and used for showing information" (Macmillan Dictionary, Cambridge Dictionary, Oxford Dictionary, Merriam-Webster Dictionary).

Bearing in mind these definitions, we could establish the Contextual and Literal frames in terms of "pinning notices". Along this line, the following terms might be considered as Contextual Frame elements: Pinterest, user, pin icon, clicking, saving, choosing board/creating board, and showing information. On the other hand, as for Literal Frame elements we may select these ones: wall, noticeboard, person, pin, notice(s), the action of pinning notices on the noticeboard, noticeboard, and showing information.

The action of pinning notices on the board implies that you may add as many notices as you wish on an already existing board or on a new board ("create board") by clicking the "save" button. Once you have added a notice, you can continue looking for other notices of your interest until your board contains all your brands. Then, by clicking the "board" box, you can see all the pins saved.

You may also make modifications on your board, adding and eliminating pins from your board. Thus, because of this comparison, we may confirm that there is a metaphorical use, because the contextual frame can be interpreted in contrast with the literal frame.

Therefore, to understand the main similarities and differences between both meanings found out, we need to stress that "users' minds need to import models from previous experience to process, structure and reason …" (Navarro & Silvestre, 2009, p. 284) about the contextual frame. Additionally, "mapping" as a mental mechanism that allows that process is necessary when it comes to understanding the similarities and differences between the contextual and the literal meaning. However, not all contextual frame elements are mapped onto their expected literal frame elements. If we look at the list of elements described (see Table 1) below, we can see that not all the elements from the contextual meaning map onto the elements from the literal meaning, and vice versa (e.g., Pinterest maps onto wall, user maps onto person, clicking does not map onto the literal frame, saving maps onto the action of pinning notices on the noticeboard, choosing board / creating board maps onto noticeboard, and showing information maps onto showing information.

Table 1 'Board' Frame: Pinning Notices[2]

Contextual meaning	Literal meaning
Frame elements	**Frame elements**
Pinterest	Wall
User	Person
Pin icon	Pin
Clicking	
Saving	The action of pinning notices on the noticeboard
Choosing board/Creating board	Noticeboard
Showing information	Showing information

According to Table 1, only one element ("Clicking") does not contrast with the literal meaning. Therefore, in the light of these observations and due to the high degree of similarities in both meanings, we may consider that

[2] Contextual and Literal Frame Elements: "Board".

there is a metaphorical relationship for the lexical unit 'board'; and thus, it might be considered as a metaphorical concept.

In Table 2, we show a structure that describes the prototypical sequence of events that occur in the context "pinning notices". Thus, when someone pins a notice in a Pinterest board you should follow these steps: (1) you have to sign up (through the option of linking either your Facebook or Twitter account with your Pinterest account); (2) the user should create his/her profile with a consistent username. That will make it easier for anyone who follows you to find you via searching on Pinterest. It also helps to use the same profile photo — that way people know it's you. (3) Once your account is active the first thing you should do is taking a look at your e-mail settings. When you first start pinning, keep all the e-mail notifications on. It's a great way to find new people to follow by seeing who likes, comments, or repins ideas from your boards. (4) The easiest way to add content from any site is to add the "Pin It" button to your web browser. You can also add pins via the Pin It button on your favourite sites. (5) To add a pin to one of your boards, click on the "Pin It" button in your bookmark bar on the website you're reading. A screen will pop up asking you to select the image you want to pin, after selecting the image you will get another window to create the pin. Then, you can select the board using the drop down menu in the window, or create one directly from the drop down menu as well. Once you have selected the board, write a description of your pin — something to help you remember why you added it to your boards. (6) To create a new board on your account, click the "Add +" button in the upper right-hand corner of your main Pinterest page. Select the option to "Create a Board" and give your board a descriptive name so your followers know what types of pins they will find on it. (7) If someone you are following has added a pin that you like, you can save it to one of your boards as well. Simply hover over the image on Pinterest and three buttons will appear — repin, like, and comment. To add that pin to your account click repin and follow the same steps you would to add a pin. (8) If you like someone's pin, but not enough to add it to one of your own boards; then, you may use the "Like" button. You can also add comments to your pins or your friends' pins by clicking on the comment button. (9) Finally, if there is a photo you have taken that you want to upload to Pinterest, you can do that by clicking the "Add +" button in the upper right-hand corner and from the screen that pops up you will be able to add a pin by pasting in the URL of a website or by uploading a photo from your hard drive.

Table 2 Board Script[3]

1. Sign Up
2. Create Your Profile
3. Check Your Settings
4. Install the Pin It Button
5. Add a Pin
6. Create a New Board
7. Repin from Your Feed
8. Like and Comment
9. Upload a Pin

5.2. Create Board

Regarding the Contextual meaning of the lexical unit 'Create Board', this concept could be defined as (a box

[3] Board Script.

in the top-left corner of the Pinterest home page) to showcase your brand's personality and taste by pinning and saving the most appealing contents. On the other hand, the Literal meaning is defined as to make something new or original, or bring into existence something that did not exist before on a board. With regards to these definitions, the Contextual frame of "Create Board" is understood as "displaying interests". Additionally, these elements constitute this frame: Pinterest, user, wall, feed (content), pin icon, the action of saving feed on a board, create a board, the action of clicking "Create Board", name your board, the action of clicking "Create" box. "Displaying interests" implies following people's boards or just the ones you like best. As you discover and follow more people and boards, your feed becomes more relevant and personal according to your interests. To start with, you should pin at least once a day so you get fresh content in your home feeds. Then, you can follow other people's boards and save, like and comment on Pins that are inspirational and related to your interests. Finally, you can create group boards and invite people who love your brand to contribute and display a high amount of content to more people.

In contrast, the frame for the Literal meaning is established as 'showing information', whose frame constituents are: Wall, person, cork tiles, painter's tape, white paint, paintbrush, ruler, pencil/pen, pins, paper (information).

"Showing information" on a notice board implies writing, fixing, or pinning various notice papers on a wooden frame. Therefore important information is always within reach.

Resulting from this comparison, a metaphorical use could be confirmed, since the contextual frame contrasts with the literal frame.

Now, if we see the list of elements described in Table 3, we can infer that once again, not all the elements from the contextual meaning map onto the elements from the literal meaning, and vice versa (e.g., Pinterest maps onto wall, user maps onto person, wall, maps onto cork tiles, feed (content) maps onto paper (information), pin icon maps onto pins (pencil, pen), the action of saving feed on a board maps onto paper (information), etc. Nevertheless, the action of clicking "Crate Board", name your board, and the action of clicking "Create" box do not map onto the literal frame.

Table 3 "Create Board" Frame[4]

Displaying interests (Contextual frame)	**Showing information (Literal frame)**
Contextual meaning	**Literal meaning**
Frame elements	**Frame elements**
Pinterest	Wall
User	Person
Wall	Cork tiles
Feed (content)	Paper (information)
Pin icon	Pins (also pencil, pen)
The action of saving feed on a board	Paper (information)
Create a board	Cork tiles, painter's tape, white paint, paintbrush, ruler
The action of clicking "Create Board"	
Name your board	
The action of clicking "Create" box	

[4] Contextual and Literal Frame Elements: "Create Board".

According to Table, there are 3 elements from the contextual meaning that do not contrast with each other. In the light of these observations and due to a certain degree of similarity in both meanings, we may consider that there is a metaphorical relationship for the lexical unit "Create Board'; and thus, it may be considered as a metaphorical concept.

The structure that describes the prototypical sequence of events corresponding to "displaying interests" (see Table 4) is outlined as follows: First, a Pinterest account must be created by the user who must then sign in on the Pinterest home page. Then, when you have signed in your account, you have to click the Add+ button in the top-right corner of the Pinterest home page. The Add dialogue box appears and presents you with three choices (Add a Pin, Upload a Pin, and Create Board). In that moment, you have to click the Create a Board option and when prompted, you should enter the basic information about your board (the name, category, and who can pin on this board), and click Create Board. As you are creating a board, it does not have a spot or a description. After you create your board, click the Edit Board button in the top-middle of your board and add a description. This is not necessary, but it does appear at the top of the page when someone visits your board.

Table 4 Create Board Script[5]

1. Create a Pinterest account
2. Sign in
3. Create a Board
4. Name your Board
5. Edit Board

5.3. Pin

The Contextual meaning of the lexical unit "Pin" is described as an image or video that people add to Pinterest. People may add pins directly from websites or apps using the "Save" button. Any pin can be saved and all pins link back to the websites/sources they came from, therefore you can learn more information regarding how to make it or where to buy it. As for its meaning, the Oxford Dictionary defines it as "a thin piece of metal with a sharp point at one end and a round head at the other, used for fastening pieces of cloth, paper, etc."

In both cases (literal and contextual meanings), we could state that they evoke the "attaching interesting/appealing information" frame.

On the one hand, the contextual frame elements are the following: Pinterest, the user, wall, feed (content), the pin icon, the act of pinning websites, and board.

On the other hand, the literal frame elements could be listed as: wall, person, paper (information), pin/pencil/pen, and board (noticeboard).

In the literal context, the lexical unit 'Pin' plays an essential role when people need to show content-wise notices. Someone can just show and provide information by pinning notices on a small piece of paper, or simply writing them on a whiteboard/blackboard (noticeboard). In this same line, the term "Pin" is understood by metonymy; that is by the contiguity or association between two concepts. Therefore, we should highlight that the name of the instrument "Pin" designates the note or the picture pinned by the "Pin".

In the context of "Pinterest", the lexical unit "Pin" plays quite an essential role when users save a specific website. When you come across an image you like, you can select the corresponding picture by a simple click.

[5] Create Board Script.

Then, assign the pin to a board and add accompanying text.

In Table 5, we outline a list of elements. Some of these elements can be mapped from the literal frame onto the "Pinterest" frame. These correspondences are the ones that provide coherence to the virtual space.

Table 5 'Pin' Frame: Attaching Interesting/Appealing Information[6]

Contextual meaning	Literal meaning
Frame elements	Frame elements
Pinterest	Wall
User	Person
Wall	
Feed (content)	Paper (information)
Pin icon	Pin/pencil/pen
The act of pinning websites	
Board	Board (noticeboard)

According to Table 5, there are only two elements (wall and the act of pinning websites) that are not motivated by the "Pin" model. The rest of the elements find correlation with other elements and that is why we may claim that the lexical unit 'Pin' is metaphorical (its contextual frame can be interpreted in contrast with the literal frame).

Hereunder, we describe an example of script (see Table 6) taking into consideration the prototypical sequence of frames in this context.

Table 6 Pin Script[7]

1. Pin once a day
2. Pin your interests and add pins from others
3. Pins link back
4. Create new Pins
5. Make your pins inspiring and searchable

Regarding the script that the lexical unit "Pin" could evoke, it could be said that first the user needs to pin at least once a day so your followers get fresh content in the home feeds. Do not just pin your own issues, you can tell a richer story by adding pins from others. Then, you should make sure that your pins link back to somewhere helpful, so that people can have a better experience and so that you can get more information to the right places. Once you have made it easy to pin from your website, you might also want to create new pins just to share on Pinterest. Finally, make you pins inspiring and searchable by adding thoughtful descriptions.

5.4. Save

The fourth lexical unit analysed from Pinterest is "save". When defining the word "save" in the contextual meaning, we could say that it refers to a box with a "pin" icon on the top right side of the page that the user may click on; in doing so, a new screen opens up and displays the 'choose board' option that the user might find useful to organize his/her feed.

[6] Contextual and Literal Frame Elements: "Pin".
[7] Script evoked by the lexical unit "Pin".

In contrast, the literal meaning of the lexical unit "save" pin is to store or keep something from being spent, wasted, or lost so that you can use it in the future (Macmillan and Merriam-Webster Dictionaries).

Therefore, the contextual and literal frame evoked by both meanings could be named as the "keeping or storing" frame.

Regarding the frame elements pertaining to the frame evoked by the contextual sense, they could be listed as: Pinterest, the user, a wall, feed (referred to as content), pin icon, the act of pinning websites, "Save" box, choose board, and the act of saving in the board chosen.

On the other hand, the frame elements found in the frame evoked by the literal sense are: a wall, a person, paper (information), Pin (also pencil, pen), and the act or writing and/or pinning information.

In the context of "Pinterest", the lexical unit "save" involves users to navigate the websites where lots of information may appear to be of their interest. If this is so, then users might pin those websites appealing for them and save them in an already existing board or in a new board.

In Table 7, we outline the list of elements that belong to the contextual and literal frames evoked. As we can see, we can easily compare some of the elements from the Pinterest frame to elements from the literal frame.

Table 7 "Save" Frame: Keeping or Storing[8]

Contextual meaning	Literal meaning
Frame elements	**Frame elements**
Pinterest	Wall
User	Person
Wall	
Feed (content)	Paper (information)
Pin icon	Pin/pencil/pen
Pinning websites	Writing/pinning information
"Save" box	
Choose board	
The act of saving in the board chosen	

According to Table 7, the site model does not motivate four elements (wall, "save" box, choose board, and the act of saving in the board chosen). However, we can state that the rest of the elements from the Pinterest frame can be easily understood in terms of storing appealing information, which may lead us to regard the lexical unit "Save" as metaphorical.

The following is an example of a script (see Table 8) that the contextual meaning of "Keeping or storing" evokes. First, the user needs to create an account and log in to Pinterest. Once the user has logged in, s/he must click the "+" button and then click "Upload a Pin" if you want to upload a pin from your computer or "Add from a website" if you want to save an image from a website. The third step implies the user to click "Choose Image" and then select the image you would like to save on one of your Pinterest boards, if you chose to upload a file from your computer. In case you want to save something from the Web, paste the URL of the page into the field and then click "Next". Finally, the user should select the board s/he wants to use to store the pin from the "Board" drop-down menu; optionally, enter a short description into the Description box. If you chose to save something from the Web, click the image you want to pin and then choose the board and enter the description.

[8] Contextual and Literal Frame Elements: "Save".

Table 8[9] **Save Script**

1. Create a Pinterest account
2. Log in to Pinterest
3. Choose image and select image
4. Select board

6. Conclusion

It is known that cognitive models (previous cultural knowledge) have influenced the digital world since they have caused an effect on the way users depict websites. With this result, in this digital environment we have centred our analysis on the role of semantic frames and metaphors, focusing on the most remarkable lexical units from "Pinterest" that may be scented as metaphorical.

To proceed with analysis, we have followed a four-step approach in our methodology: First, we have described each lexical unit contextual and literal meanings in each individual frame (contextual and literal). Second, we have drafted their contextual and literal frames. Third, we have resolved the extent to which this selection of lexical units has been considered metaphorical. And finally, we have described the script evoked by the representation of each lexical unit.

Considering the lexical units analyzed, we might come to the conclusion that the real-life semantic frame has been modified into a virtual semantic frame. Additionally, these differences (Literal vs. Contextual frames) have caused the fact of transferring a real-life frame into a virtual (contextual) one in our conceptualization, which at the same time gives us greater coherence and a better understanding of this contextual frame. This is known as "Metaphorical Transference" (Esbrí-Blasco, Girón-García & Renau, in preparation). As a consequence, the identification, description and analysis of metaphorical lexical units, might help explain the connection between the digital world and our previous cultural representations.

Finally, our expectations rely on the possibility of undertaking further exploration and analysis to calculate to what extent lexical units in the virtual world are familiar to our previous conceptualization of cognitive models (i.e., "Metaphorical Competence").

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Journal of Modern Education Review, ISSN 2155-7993, USA
December 2017, Volume 7, No. 12, pp. 876–882
Doi: 10.15341/jmer(2155-7993)/12.07.2017/006

http://www.academicstar.us

How to Improve Understanding Using 3D Objects in Ebooks and Augmented Reality

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Abstract: The development of educational materials for computer equipment and mobile devices, uses only a small fraction of the graphic possibilities that these devices allow today. Sometimes, they are digital or online versions of the same documents we used to teach with.

This paper describes work in progress about two educational materials for undergraduate students in which we use rotatable three-dimensional elements embedded in digital documents taking effectively advantage of the graphics capabilities of mobile devices. These elements are 3D models that have been incorporated into e-books to explain abstract concepts in subjects such as Physics and Descriptive Geometry. With them, we have verified that students understand almost instantly what the two-dimensional drawings stand for and what the projections represent in the planes corresponding to the view (top, front or lateral) of an object. The material described has also been highly appreciated by teachers of these two subjects.

The difficulty that students have to imagine the volume represented in the two-dimensional drawings is due to the fact that they have not yet fully acquired the cognitive structures of spatial thinking. In response to this circumstance, it was proposed the possibility of having three-dimensional objects that could be rotated within the didactic material.

The procedure developed for this project, allows the same 3D object file inserted into the eBook, to be uploaded to an augmented reality app to be displayed on a printed companion material. This advantage allowed us to develop two useful and attractive educational materials with the same work effort.

Key words: eBook, 3D, digital objects, augmented reality

1. Introduction

Physics and descriptive geometry are sciences based on real objects, so it is imperative to understand the object in space and what vectors and lines represent. In practice, Descriptive Geometry is taught by alluding to the student's intuition in order to solve a certain exercise, however if the student fails to put his intuition into practice because he has not yet developed spatial cognitive structures, comprehension is not performed. When this happens, the student only focuses on the sequential steps of a given drawing procedure, thus giving them an automatic solution.

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In Physics, a vector is a mathematical concept that has both magnitude and direction relate to a coordinate system. This is difficult to represent in a two-dimensional drawing, either in a flat projection or in a perspective view. The result is confusing to the student who might not understand the array of vectors and forces presented to him not by the arrangement itself but by not understanding the location and direction of such vectors.

For students of Statics as well as for those of Descriptive Geometry, the concepts taught in these subjects are the foundation to acquire more complex knowledge in their professional careers. Therefore, comprehension as well as acquiring the cognitive skills necessary for this understanding to occur, are two essential problems of education.

Aware of that problem, we set ourselves the task of digitally constructing all the exercises of these two subjects, Physics/Statics and Descriptive Geometry, knowing that the technology would allow us to combine explanatory texts and rotatable digital objects within the same educational product: an eBook. These 3D movable objects allowed us to develop a new and different educational material for the different way of learning of today's students.

2. Theoretical Framework

There are studies that explain the age when youngsters acquire three-dimensional cognitive abilities, however, the spatial reasoning skills including the ability to represent objects from multiple perspectives, still needs to be strengthened until it enables them to produce accurate representations of objects viewed on different projection planes.

It has been said that exposure to better computer graphics, virtual worlds and video games could have favored the spatial notion ability, but this is not necessarily reflected during courses. On the contrary, the familiarity that students have with these graphic elements, detached them, at least motivationally, from bi-dimensional educational methods.

As teacher of Industrial Design during thirteen years, it is clear to see that there is also a relationship between people's spatial thinking capacity and their ability to create. Students with greater cognitive capacity of three-dimensional thinking, make more complete and creative designs as they better conceptualize their ideas.

All educational materials that exercise and foster student’s three-dimensional reasoning skills will be reflected in an increase of their creativity, not only their understanding. The motivation as teachers should make us explore the best visualization resources that technology allows and incorporate them in educational materials.

3. Methodology.

For the development of the projects described in this paper, we began by choosing the optimal material to cover the syllabus of each of the subjects. Once refined the scope and approach for each topic, we chose those exercises that would be built in 3D. At the same time, explanatory texts were written, technical drawings were made and images for the graphic interface were elaborated.

From the experience of previous projects, we defined the use of iBooks Author for the development of eBooks for iPad and the use of the app Aurasma for the augmented reality version. In part, this decision was made because the university where this project was carried out has classrooms equipped with iPads for students to work with.

Several CAD softwares were tested for the construction of 3D objects. The best results were obtained from

3ds Max. Additionally tests were carried out with Maya, Rhinoceros, Solid Works and AutoCAD. Several constructive methods were also tested (extrusion, loft, shell, etc.).

This stage of tests was deadening since it was intended to reach an optimal method before starting the production of the rest of the 3D objects.

Each 3d object went through the process of scaling, orienting, mapping, texturizing, lighting and exporting it, to be incorporated into the iBooks Author and the Aurasma service. Both programs require the 3D file in a .dae format so our interest was that the construction method would be useful for both programs. In this way, testing process ended until the file was able to work correctly in both applications, spinning it in the iBooks app for iPad and deploying through mobile devices from the Aurasma application.

Although some programs export to .dae format, the only useful files were obtained with the Open COLLADA[1] exporter, installing previously the plugin for the CAD program used, in our case 3Ds Max.

Once the digital construction process was determined, we began to elaborate the images that would be used to accompany the 3D models as projection planes. For Descriptive Geometry, this is imperative because students are expected to see how the object coincides with the projection on the front, top or lateral views. For that purpose, we used images in .jpg format applied as Bitmap in Standard material. Opacity reduction was applied to avoid obstructing the view of the 3D object while rotating it. A planar UVW map was applied from the CAD modeler so that the object carried this information from its origin.

Both projects have dozens of 3D objects so it was very critical to decide from the beginning the nomenclature of the files, the associated images and the exercises to which they corresponded.

Creating an eBook with ibooks Author is a straightforward process. To facilitate its elaboration is advisable to have all the material previously in a Word document. It should be pointed out that the formulas required for the textual part of the Physics eBook were distorted many times. The files came from the software “Mathematica” and were exported from there as RTF to avoid any modification in the formulas. To avoid the mistakes that began to be detected and reduce the exhaustive revisions that could have ended in serious errors, many of the formulas were separated as images, capturing them from RTF document at the same time that the text was being copied to iBooks Author.

To embed 3d objects, iBooks Author has a function (3d widget) that incorporates them directly to the page where they need to be placed. They can lay next to the text to which they correspond and scale them as needed. The .dae file is dragged directly to the widget from its position on the hard disk where it must be stored next to the jpg images used to map it.

The use of the eBook during classes was done differently in Statics than in Descriptive Geometry according to the didactic needs of the teachers. The teacher of the Statics asked the three-dimensional objects to accompany the statements of problems that are given to students to solve after a theoretical class. In this way, students analyze the data from the enunciate and the 3D model to better understand what is asked in the exercise.

For her part, the geometry teacher requested the 3D material for the explanation of the concepts themselves. The teacher explains the theory and the purpose of drawing process and after a first approximation to the concepts, she presents the three-dimensional object to complete the explanation.

Both teachers noticed an increase in the concentration and understanding of the students, considering also that the behavior was so cordial that classes were easier to teach.

[1] https://github.com/KhronosGroup/OpenCOLLADA/wiki/OpenCOLLADA-Tools.

In addition to the eBook developed for iPads, a complementary material was designed for students who could view 3D objects on top of printed material with their own smartphones. This option is possible with augmented reality.

Augmented reality is very appealing to students. As many products use an application called Aurasma to display information through augmented reality, numerous students already have this application installed in their smartphones.

Aurasma allowed us to use the same 3D files that we had embedded into the eBook to upload them to their app. With this advantage, it was possible to multiply the benefit of the eBook, obtaining two equally attractive and educational products, developed with the same work effort.

Augmented reality (AR) consists of having a printed image that functions as a trigger for an action. In our case, the desired action is that a 3D object could appear superimposed over the printed image through a smartphone. The printed image acts as a recognition pattern for the AR app installed on the smartphone, which in our case is Aurasma.

The process for developing an AR product involves two elements: the action trigger image and the 3D object that will appear above it.

The images that will act as triggers must have a certain singularity that allows the application to distinguish them among many others. This trigger is uploaded to the Aurasma online application where it is associated with the element that will appear by augmented reality. In our case, that element is the .dae file that we embedded into the eBook.

In the case of Aurasma, .dae files cannot be uploaded alone as in iBooks Author. Each object is required to be uploaded as a compressed .tar file containing: the .dae file, the .jpg images used to map it and a “thumbnail.png” file of exactly 256×256 pixels in dimension which can be, i.e., the logo of the project.

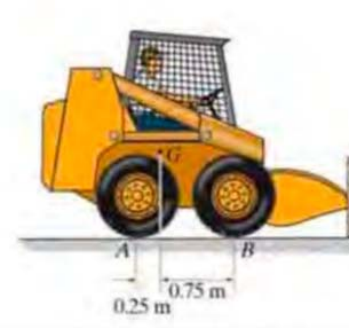
We placed the triggers along with the printed exercises that were given to the students for their homework. In this way, homework became a source of expectation and stopped being a reason for stress.

4. Implications/Discussion

The eBook developed for the subject of Statics has been used for 3 years with undergraduate students of mechanical engineering. It is installed on the iPads that are part of classroom equipment. This type of classroom is equipped with 30 iPads. They also have blackboards that have technological attributes that facilitate the taking of notes and the saving of the exercises written on the board. While these classrooms provide a modern environment to undergraduate subjects, teachers use mostly commercial apps. Our project was really the first product developed for these classroom types. Students have responded very favorably to the eBook and have expressed in polls their wishes for having more educational texts like this.

In the case of Descriptive Geometry, it was impossible to impart the subject in this type of classrooms because students require larger tables to draw. The problem was solved by projecting directly from the teacher´s iPad. Despite this drawback, students of geometry have shown more interest than students of Statics. They are more willing to participate and rotate the three-dimensional figures themselves. Their comprehension is immediate and their interest in the class is very different from what students showed before starting to use the eBook. This semester is the first in which the descriptive geometry eBook has been used and undoubtedly has been a very useful tool for the teacher.

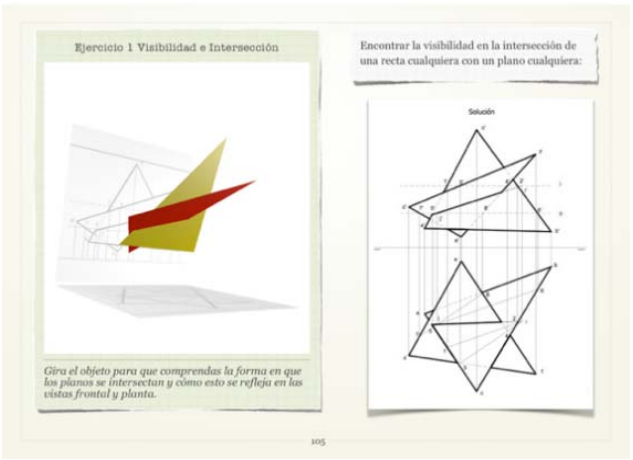
So far, teachers have not claimed to use regularly the augmented reality companion which has represented more novelty and attraction than an instrument of teaching. Having this extra material is a source of satisfaction but does not seem to maintain the concentration that produces the eBook.



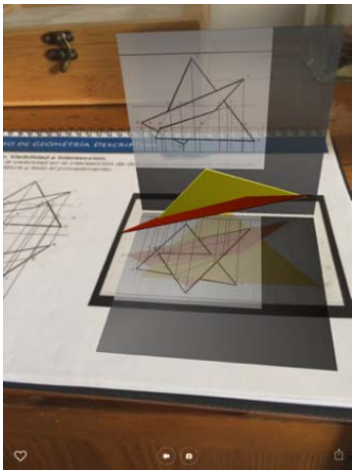
Similar exercise in printed Statics regular text books

Rotating 3D model within the eBook

Same object displaying on top of the printed version with Aurasma



Intersection exercise where the 3D object remains movable next to explanatory text.



Same exercise within Aurasma app

Results from student's surveys:

Table 1 Survey Applied to Students of Descriptive Geometry

Descriptive Geometry Students (27)	yes	no	indifferent
Do you consider it useful to have the text of the subject in eBook format for tablet?	87.5%		12.5%
Do you consider that there is an improvement in three-dimensional visualization?	100%		
Comparing it with the diagrams and projection views with which the subject is traditionally taught?	100%		
Do you consider that the manipulation of the models within the eBook, allowed you to better understand the configuration to which the exercise refers?	100%		
Would you like to have more teaching materials with rotatable 3D objects?	100%		

Table 2 Survey Applied to Students of Statics

Statics Students (120)	yes	no	indifferent
Do you consider useful to have the text of the subject in an eBook for iPad?	96%		4%
Do you consider that there is an improvement in the visualization of 3D objects compared with the traditional diagrams of the printed book?	96%		4%
Do you consider that the manipulation of the models within the eBook, allowed you to better understand what the problem asks?	80%	4%	16%
Would you like to have more teaching materials with rotatable 3D objects?	92%		8%

5. Conclusions

The incorporation of 3D rotatable objects interleaved with the text of the disciplines of Statics and Descriptive Geometry, has been decisive to achieve the understanding of the students of these two subjects.

The development of the material in eBook format with these characteristics has given the teachers of these two subjects a unique tool to be explained effectively.

From the surveys, the benefit of these materials is evident in the understanding and motivation of the students who have used them.

For now, the use of supplementary material using augmented reality has not proven its didactic effectiveness but it has been a source of attraction that increases the expectation in these two subjects previously considered unappealing for students.

The development of projects such as those described in this paper requires expertise in several areas. Obviously, knowledge of the subject from which the new educational material is planed is indispensable; CAD modeling skills are required to digitally construct three-dimensional objects as well as gain experience in assembling documents in iBook Author and Aurasma. While this knowledge can be acquired by the same person, the development time could be reduced if work is done in an interdisciplinary team. This approach has been very helpful to us.

Publishing in the Apple store is not difficult to accomplish. Special care must be taken to use only self-made material or images free of copyright. However, if the eBook has not been uploaded to the Apple Store, it can still be installed individually on students' iPads. The best option is the pre-installation in classrooms equipped with iPads.

Investing in time, equipment and interdisciplinary work to create eBooks with these and more features described in this paper, is well-timed. According to studies and trends published by Gartner, e-text technology achieved in 2 years a consolidation level and it has reached its Plateau of Productivity. The benefits of this technology have been demonstrated and accepted by the community. The tools and methodologies to create them are becoming more stable as they enter their second and third generation. A growing number of publishers are more confident with risk reduction as user acceptance increases. Gartner's trends establish that approximately 20% of the target audience of electronic texts have adopted or are adopting the technology.

In addition to eBook trends as an educational tool, the eBook market can become a rewarding option to encourage developers. The digital book market has grown every year compared to the printed book. Sales of US e-books are expected to outpace printed book sales by 2018, according to PricewaterhouseCoopers (PwC) studies published in The Economist.

Since ISATT is not a conference of technology developers but rather of academics, this paper was written with the information of the technical process in such a way as to be more useful to the community of teachers

attending the conference.

Acknowledgments

The projects presented in this paper have been supported by the NOVUS call of the Tecnologico de Monterrey University (Mexico) for experimentation in educational innovation (2013 and 2015).

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Journal of Modern Education Review, ISSN 2155-7993, USA
December 2017, Volume 7, No. 12, pp. 883–893
Doi: 10.15341/jmer(2155-7993)/12.07.2017/007

http://www.academicstar.us

Enhancing Creative Thinking and Innovation among Trainee Teachers during Game Project

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Abstract: The purpose of the study is to explore trainee teachers' creative thinking and innovation during physical education game projects. It was conducted in one of the Teacher Training Institutes in Malaysia for duration of four weeks. Thirty-six trainee teachers in twelve groups participated in this study. Qualitative research method was adopted as the researchers observed the participants' creative thinking and innovation process during games project. Data were collected from observational checklist, reflective journal writing and semi structured focus group interview transcriptions. All the qualitative data were later analyzed with Nvivo data analysis process. The proposed game projects and innovation process enables trainee teachers to develop creative thinking skill. Data revealed themes like decision-making, problem solving, creativity and teamwork. Kangas's (2010) Creative and Playful Learning Process Model were utilized in this study. The finding showed that trainee teachers' creative thinking skill enhanced during the game inventing innovation process. Therefore Teacher Training Institute will have more success using innovative games project to enhance creative thinking skill among physical education trainee teachers.

Key words: creative thinking, innovation, trainee teacher, games

1. Introduction

Education organization is moving towards creative schools, which emphasizes on creative learning environment (Davies, Jindal-Snape, Collier, Digby, Hay & Howe, 2013). Education is the basis for economic knowledge and growth through cultivating creative and innovative citizens as affirmed by many countries (Stables, 2009), which has advanced from traditional education (Sawyer, 2006). "The flourishing attention on creativity and its promotion in schools motivated many researchers to examine implicit and explicit theories to understand creativity" (Saracho, 2012). The teachers' implicit theories on creativity are refers to get the teachers' view, beliefs, or conceptions on creativity (Andiliou & Murphy, 2010; Kampylis , Berki & Saariluoma, 2009; Tin, Manara & Ragawanti, 2010). While, explicit theories on creativity are focused on researchers' empirical studies that contribute to creativity knowledge in schools (Babalis, Xanthakou, Kaila & Stavrou, 2012; Davies et al., 2013;

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Kangas, 2010; Konstantinidou, Michalopoulou, Agelousis & Kourtesis, 2013; Lassig, 2013; Piffer, 2012). Therefore, an increase attention on how to equip in-service and trainee teachers' with creative and innovative thinking, particularly in primary education is the main focus (Kampylis et al., 2009). Creativity involves mental process in solving problem, personality-mental competencies, and product (Babalis et al., 2012). Its development can be influenced by mood and emotion). Accordingly, an introduction of game project among the trainee teachers' in this research may take care of their "feeling" in creative thinking learning. Game has positive effect on learning qualities in term of actions and attitudes in playful learning environment (Kanga, 2010). This creative learning experience may enhance their future roles in pupils' creativity development (Davies et al., 2014). Creative learning maybe transferred by structuring physical and pedagogic environment as teaching for creativity based on command of the topic's relevancy, knowledge, creative learning process, and innovation (Davies et al., 2014). Moreover, peers collaboration provides an opportunity for sharing and applying knowledge, co-creation, and design the play processes (Kanga, 2010). Hence, it is essential to cultivate trainee teachers' creative behavior as role models and mentors for pupils' creativity development (Davies et al., 2014; Kampylis et al., 2009; Newton & Beverton, 2012). Creative thinking is the essence for innovation (Brand, Hendy & Harrison, 2015). However, there was limited research on how innovative game projects as learning processes that promoted creative thinking and innovation in physical educational classes at Teachers' Training Institution, and particularly in Malaysia. Therefore, this study assessed the extent of creative thinking and innovative experiences gained by the Malaysian trainee teachers.

2. Literature Review

One of the thinking goals is creative thought (Newton, 2012). Creativity concerns novelty or originality, appropriateness, plausibility, and rightness-of-fit or fitness-for-purpose (Newton, 2012; Newton, 2013). It also refers to development of creative knowledge by using imagination and possibility thought (Craft, 2005; Cremin, Burnard & Craft, 2008; Egan, 2005). The six creativity measurement are person, process, product, and/or press (Rhodes, 1961); persuasion (Simonton, 1995); and potential (Runco, 2003). Creative person refers to "information about personality, intellectual, temperament, physique, traits, habits, attitudes, self-concept, value systems, defense mechanisms, and behavior" (Rhode, 1961, p. 307). Creative process concerns a series of creative steps in search of "motivation, learning, thinking, and communicating" for creative production (Rhode, 1961, p. 308). Creative product is the creative engagement outcome in term of tangible product (Rhode, 1961), behavior or ideas (Richards, 1999). Creative press explores associations among (between) creative persons, processes, and products with the influential factors of social and environmental. Creative persuasion relies on how creator succeeds in influencing others to agree with them as creative person, processes or products (Simonton, 1995). Whereas, creative potential refers to the sensitivity of educators in recognizing youngsters' creative potential for translating new meanings and interpretations (Runco, 2003). Lassig (2013) adopted four approaches creative process of adaptation (modify the existing work), transfer (new application), synthesis (combination of ideas to form new idea), and genesis (originality) to study 20 adolescents' creative process engagement.

Past studies reported that creative teachers are high in intrapersonal awareness (Reilly, Lilly, Bramwell & Kronish, 2011), well-being enhancement (Grainger, Goouch & Lambirth, 2005), goal-oriented motivation through problem-solving, task-commitment, effective and collaborative strategies (Hong, Hartzell & Greene, 2009), and creative behaviors in term of curiosity, connectivity, autonomy, ownership and originality (Grainger et al., 2005;

Jeffrey, 2006). In addition, Davies et al. (2014) in their systematic literature review of 210 educational research reported that school supportive culture of teaching for creativity is important to boost teachers' creativity conceptual, creative skills and knowledge, collaborate constructively with a mentor, action research and reflection practices. In this research context, game project may provide an opportunity for them to develop and experience awareness of their own learning needs that can be transformed as awareness of future pupils' needs in their creative learning process as reported by European's case studies in Creative Partnership projects (Davies et al., 2014). Its significance has been highlighted as 132 Greek in-service and prospective teachers felt lack of training and confidence in releasing primary school students' creative potential (Kampylis et al., 2009). Besides, incubation period, unconscious process time-framed is deemed as part of the creative process for Australia three primary school pupils (Webster & Campbell, 2006). On the other hand, Davies (2006) reported that formative assessment with feedback is found to be more effective in promoting creative learning among in-service development courses.

Kangas (2010) developed the model of creative and playful learning (CPL) with four processes from orientation (knowledge co-creation), creation (game design and creation), game play (small group), and elaboration (small group or whole class levels — elaboration, reflection, and evaluation) for 68 children aged 7–12. Game co-creation requires constructive knowledge, joint negotiation, creative collaboration, and reflection. The importance of integrating fact, fiction, and playing learning environment in teaching and learning as the foundation for crafting creativity, imagination, and group work skills without neglecting academic achievement – physical, participative, knowledge co-creation, thinking, and media skills have been highlighted. It is also a meaningful across curriculum teaching and learning approach. However, the teachers are challenged with multi-roles such as being facilitators, instructors, learners, and tutors in this creative and playful learning processes that are different from traditional school system (Kangas, 2010). The significance of this game approach is supported by Davies et al. (2013) in their systematic literature review of 210 educational research particularly in attaining pupils' creative learning and teachers' teaching for creativity development. With similar principles, Quay and Peter (2012) integrated five models of physical education to create a creative physical education that emphasized on teamwork, game, season, and practice with health-related fitness for primary students. In another study, Konstantinidou et al. (2013) found that 220 physical educators' from 205 Northern Greece elementary schools demonstrated poor theoretical background on pupils' creative characteristics (cognitive aspects, motivation, and personal properties) and their creative outcome. They urged the European Council to improve creativity training as part of the educators' education for promoting creative schools. Furthermore, European Union has funded few types of Creative Activities in Learning for Innovation through entrepreneurial programs in order to examine how creativity facilitated entrepreneurial self-efficacy (one's belief in own skills and abilities) along the innovation processes (Barakat, Boddington & Vyakarnam, 2014). Furthermore, Figl and Recker (2016) urged that diagrammatic process representations provided more appropriate ideas than textual descriptions on process-redesign creative tasks as creative problem solving.

In other study, a direct relationship between creative thinking and ethical decision making in the process of forming and assessing new ideas to solving problems has been found in nursing education (Mumford et al., 2010). A creative decision-making and problem solving are essential skills in nursing profession (Bunkers, 2011; Schultz, Zippel-Schultz & Salomo, 2012). Four creative thinking strategies consisted of diversity of learning, freedom to learn, learning with confident, and learning through group work were categorized after systematically reviewed eight nursing articles (Chan, 2013). The researcher claimed that educators could develop students' creative

thinking and problem solving skills confidently and collaboratively with adequate freedom and guidance. In line with this, 100 students (IID group) of Malaysian Universiti Teknologi MARA who have engaged in innovation convention by presenting any innovation, inventions and design projects were also claimed to have more confident and motivated in their problem solving skills, communication skills and work as a team (Mahdi, Sukarman & Yok, 2015).

Collaborative learning has been differentiated from creative collaboration (Craft, 2008; Hämäläinen & Vähäsantanen, 2011). Collaborative learning refers to group-based intentionally shared knowledge and shared learning processes; while creative collaboration is based on socialcultural approach (Vygotsy, 1978) that emphasizes on a situated group interaction processes that evoked interdependency on shared knowledge, competencies, and goals in constructing new useful ideas or solutions for the community. Therefore, in order to promote creative collaboration learning, teachers are urged to set appropriate learning activities and contexts with updated theoretical, pedagogic, and technological integration (Hämäläinen & Vähäsantanen, 2011). Consistent with Wu, Wu, Chen, and Chen (2014), the three most influential factors of creativity have found under Community Dimension from 40 senior experts. The factors were “Integration of creative education” under “Social education environment” criteria; while “Oppressive of environmental behavior” and “Respect for intellectual property” under “Social cultural environment” criteria. “Integration of creative education” meant at each civil level, the government and private organizations jointly set policies for creative and innovation education. “Oppressive of environmental behavior” referred to adequate external pressure to push for creativity development. “Respect for intellectual property” reflected a protection on domain of knowledge and creativity in knowledge. In other words, the educators and policy makers play crucial roles in developing students’ creativity (Wu et al., 2014).

West and Farr (1990, p. 10) defined creativity as “the ideation component of innovation”, and innovation as “the proposal and applications of the new ideas”. Similarly, creativity is thinking something new, and innovation is implementing something new (Sloane, 2016). Both are closely interlink. To identify an innovation in learning, we must define the standard practice as well as the new way and determine that the new way is better. However, chasing after the next new desirable goal with little evidence of its efficacy wastes valuable time, money and risk students at risk of missed opportunity to learn true innovation. A proposed innovation can be tested via formative, iterative evaluations prior to the needed validation with randomized, controlled trials (Layng, Stikeleather, & Twyman, 2006) or through innovation contests (Adamczyk, Bullinger & Möslein, 2012).

Innovation contests were classified into five categories through systematically reviewed on 201 publications by Adamczyk et al. (2012). They were economic perspective, management perspective, education focus, innovation focus, and sustainability focus. Publication was highly recommended as a mean to develop initiative within and between organization(s) in the last three categories. In education focus, innovation contest was integrated into coursework for motivating students’ capabilities in generating ideas, design, technical, teamwork, and communication. While, management perspective referred to how the innovation contest management set the platform to encourage participation and innovative contribution. Therefore, this study incorporated innovative traditional game project as part of the coursework of a physical education course offered by one of Malaysian Teachers’ Training Institute.

Innovation is valued as a catalyst to growth, an add value to desirable objectives (Mobbs, 2010). As defined by Rogers (1983), an innovation is “an idea, practice, or object that is perceived as new by an individual or another unit of adoption” (p. 11). It provides an alternative solution or new way to a problem or creates a novel

solution to meet needs for an individual, group, or organization (Rogers, 1983, 2003). Rogers (1995) also argued that the four elements of innovation by diffusion were invention of the innovation, diffusion (or communication) through the social system, an adoption period, and consequences. Diffusion is the process by which an innovation is communicated through certain channels among members of a social system over time (Rogers, 2003; Cuban, 2010). In other words, innovation is the application of an idea or invention, adapted or refined for specific uses that fitted in its particular contexts (Gertner, 2012; Manzi, 2012). The implementation of an innovation proceeds over time, often with adjustments in course as the innovation is fitted to the context. An innovation replaces the standard product, program, practice, or process with something better, and as the majority adopts it, the innovation then becomes the new standard.

This research considered the first elements of Rogers' innovation by diffusion process. It engaged directly with the role of teacher education in progressing curriculum innovation from university coursework into schools as physical education teacher education (PETE) pre-service teachers translate the curriculum and pedagogical knowledge addressed in coursework into enacted curriculum while on professional teaching practice (PTP). In so doing, the study connected with a sustained line of critical commentary in the physical education field. This commentary suggests an apparent inability of initial teacher education to generate curriculum and pedagogy that can effectively challenge the longstanding dominance of sport-based multi-activity curriculum and associated, traditional pedagogies (see for example, Crum, 1983; Kirk, 2010; Locke, 1992; Penney & Chandler, 2000).

Innovation may be categorized as Closed Innovation and Open Innovation based on the policy whether ideas remain constrained within the organization or even shared externally. Henry (2006) defines Open Innovation as the use of purposive inflows and outflows of knowledge to accelerate internal innovation. Open innovation however explicitly incorporates business model as the source of both value creation and value capture. Therefore, present research focused on the open innovation to stimulate Malaysian trainee teachers' internal innovation in order to achieve greater learning outcomes. ICTs, e-learning and innovation are often considered by government and researcher greeters as effective solutions for providing equal opportunities for instruction and success in schools everywhere (Barbour, 2010; Canadian Council of Learning, 2009; Conseil Supérieur de l'Éducation, 2009). However the need for change and innovation in education has yet to provide enough orientation and time for teachers to change their practices in transforming students' learning environment into deeper understanding or knowledge creation. Teachers frequently cite lack of time as a primary reason for failing to implement an intervention with integrity (Dusenbury, Brannigan, Falco & Hansen, 2003; Klingner, Vaughn, Hughes & Arguelles, 1999). The demands of time also impact the acceptability of interventions more broadly (Elliott, 1988), as new interventions almost always require training of those implementing the changes and, often, personnel in other parts of the system. Furthermore, if teachers perceive no advantage to a new/innovative program or practice that incurred higher costs when compared to the current practice, they are unlikely to adopt it (Harris, 1979). Consequently, the expected changes rarely occur or are rarely sustainable (Cuban, 2010; Christensen, Johnson & Horn, 2008; Seidel & Perez, 1994). Therefore, deep educational innovation remains a major challenge for our schools and our society (Bereiter, 2002; Christensen, Johnson & Horn, 2008; Cuban, 2010; UNESCO, 2008).

In summary, by referring to the above literature review, present research focuses on trainee teachers' creative collaboration processes that explore creative thinking skills which may comprise attention, memory, information and associative processes, analogical thinking, metaphorical thinking, problem identification and solving, intuition, unconscious processes, and mindfulness. They were given four weeks to produce a game project creatively and innovatively based on traditional games as part of the coursework but optional for publication which has been

suggested by Adamczyk et al. (2012). Present research would adopt and adapt Kangas's (2010) CPL Model that emphasized on the linkage among curriculum-based learning, game co-creation, and play, except for the usage of new technologies or computer games in playing learning environment at different level of educational setting. The Game Carnival set as the innovation contest platform to realize innovative game project and to foster creative cum innovative among Malaysian trainee teachers.

4. Methodology

Qualitative research method was adopted for this study to collect and analyze data on thirty six Malaysian Trainee Teachers in twelve groups for four weeks related learning experiences of innovating traditional games systematically based on Kangas's (2010) CPL model. It consists of four processes from orientation (knowledge co-creation), creation (game design and creation), game play (small group), and elaboration (small group or whole class levels — elaboration, reflection, and evaluation). The model was adopted and adapted as follows:

4.1 Orientation

PJMS3092 physical education classes were considered as the orientation of knowledge creation level. Since Traditional Games was part of the course outline, the trainee teachers were given task to create innovative traditional games by providing opportunity to play traditional games, in addition to their past traditional game experiences. During the class, trainee teachers discussed the problem statements and brainstormed ideas. They modified and created innovative traditional games based on their initial ideas and past experiences. Knowledge co-creation requires trainee teachers to have some knowledge orientation to traditional games before they could create an innovative traditional game. Therefore the trainee teachers' used their own gained experiences from playing traditional games in this course successfully. Group discussion and teamwork also helped the trainee teachers to create innovative traditional game.

4.2 Creation

Innovative traditional game design and creation was assigned as part of the coursework task requirement in order to motivate creative and innovative participation (Davies et al., 2013). Group members brain storm problem statements and discussed few games based on their own experiences. On the first week all the group had some idea on what to create based on the need to create a new modified game. Traditional games are popular in Malaysia and played during free or leisure time activity (Balakrishnan, Ooi & Vengadasalam, 2016). Ancestors utilized these leisure time traditional games during their leisure activity. Some trainee teachers had the opportunity to experience playing the traditional games of their own, some don't. However, during the discussion session, all group members were able to contribute their rationale for choosing a particular game. The following week each team members justify reasons to create an innovative traditional game with modified game design and procedures.

4.3 Game Play

During the game carnival, the task was assigned to each group member and they carried out their task successfully. All the visitors who came to visit each game station were welcomed and briefed on the game innovation created by the group members. Trainee teachers explained how the game should be played to the visitors. In order to make the game attractive and interesting to the participants, the rule and the requirements of the game are made short and simple to understand. The entire group also designed creative posters, which explained very well on the game rules that they created. Interested participants were given chance to learn, to do

hands-on, and experience the fun movement in competitive situation in accordance to the needs, abilities, and interests.

4.4 Elaboration

In this study, the elaboration process was the data collection level. It comprised observational checklist, reflective journal, and semi-structured focus group interview. While the game carnival was setted as innovation contest to evaluate their innovative traditional games.

An inductive approach was applied to analyze all the various sources of qualitative data because it can capture and interprets meaningfully (Gioia, Corley & Hamilton, 2013; Lincoln & Cuba, 1985). Focus group interview data were collected after the game carnival. Participation in the focus group volunteered to be interviewed. Focus group interviews were semi-structured and were remained open for any additional questions that arose. Identification numbers were assigned to protect the trainee teachers' identity pseudonyms for data analyses. Audio recordings were transcribed verbatim and were then distributed to each author for content validity. The data then were then analyzed using six stages of thematic analysis: collect data, prepare data for analysis, read through data, code the data, code the text for description and code the text for themes. All the collected data were analyzed with Nvivo data analyses process. All the four authors then met to discuss their individual coding decisions and consensus was reached.

5. Findings and Discussion

Following Kangas' (2010) CPL Model, it initially shows the discoveries of the trainee teachers' learning point of view on innovative traditional games. Table 1 illustrated the four themes of decision-making, problem solving, creativity, and teamwork that emerged from the transcribed interview data.

Finding of this study supported trainee teachers' positive experiences innovating traditional game project for the games carnival. The experience of the carnival itself was much of an enjoyment for the participated trainee teachers. Innovation in these games were introduced by these trainee teachers by systematically playing with their friends. According to Kangas's CPL Model this is the Knowledge creation level. Another aspect that has been highlighted during the group discussions was the opportunity for enhancement creating and modifying traditional game for the new generation. "By infusing modern elements into the traditional game teacher trainees have given a new look to the games (VR/L8-9)." The findings indicated that the learning is not just about the cultural aspect of the games, but also about how trainee teachers' creativity thinking process developed during the modified game creating sessions. Past studies reported that more creative environment could enhance trainee teachers' creativity (Sternberg, 2003: Weston, 2007; Gardner, 1993; Howell, 2008)

The qualitative data also showed some themes like decision-making, problem solving, creativity and teamwork. The innovation of games project prepared a platform for trainee teachers to invent new games. The second Level in the Kangas model is the Creation Level. Trainee teachers were asked to brainstorm and modify the chosen game for their group project. During the innovation process, an atmosphere of cooperative competition was fostered among trainee teachers to value the teamwork. These experiences supported trainee teachers to apply the knowledge of innovation in school later. The finding also supported that they were happy and felt good to learn about their culture, as indicated by "We learned that there are elements from different culture." and "I felt proud because I was learning what my ancestors used to play". Trainee teachers thinking critically by decision making and problem solving. As reported in past studies (Howell, 2008; Padget, 2012). Trainee teacher's learned

how to create a new game design for the students in school later.

During the game carnival, the trainee teachers' portrayed good game organizing management and leadership qualities. This is the Level 3 of the Kangas Model that is Game Play. Findings from this study also added knowledge that the reflective practices helped trainee teachers' understandings of how their learning experience of innovation will be very meaningful in future. The trainee teacher reflected their learning experience as "By creating this innovative game, the experience can be used in my teaching in future".

This journal writing practice provided a great opportunity for trainee teachers to describe what they had learnt and engaged themselves by participating in these games during game projects. Moreover, learning innovation in games project itself will enhance trainee teachers' creativity. What discovered were the learning experiences and the trainee teachers' ability to use language deliberately to discuss their game learning experiences as a reflective practice. More and more reflective practices enhance trainee teacher's ability to bring out new ideas (Padget, 2012).

Table 1 Themes: Teacher Trainers' Learning Experiences

Themes	Free Notes
Decision making	"I got a lot of ideas innovating game" (Int/FG1/L46) "creating Innovative traditional game, I believe that I can attract young children" "We manage to brainstorm ideas"(Int/FG3/l34) "We innovate, did hybrid game where we mixed *gully* with mainstream modern game with Petanque" (Int/FG1/L57) By infusing modern elements into the traditional game teacher trainees have given a new look to the games" (VR/L8-9)
Problem solving	Students were able to identify problem arise while conducting the game and decided how to solve the problem while playing game" (OC/L5) The materials used for this game is environment friendly; such as old newspaper, tape, A4 paper's cover, and portable old newspaper court (VR/L38-40) We innovated how to make this game interesting so that we can reduce the waiting time and students excited to play this game anywhere.(Int/FG/L29) Trainees also reported that the experience helped them during teaching practice in school
Creativity	"I learned to become more creative (Int/FG3/L7) "By organizing this traditional game, I learned that making this activity make me able to think creatively and do critical thinking"(Int/FG3/L21) "By creating this innovative game, the experience can be used in my teaching in school later" (Int/FG2/L74) The students were able to adapt and innovate the traditional games which has been long forgotten (VR/L6-8) Students innovated this game; by replacing the gravel (batu kelilir) with items like rubber bands, bottle caps and buttons. Furthermore, to make the game more interesting they designed variation wheel (VR/L13-15) This game has indeed enhanced students' creative thinking whereby they could think of obstacles to infuse the element of fun to the game (VR/L29-31) Ceper Alkagi game enhanced participants' patience and creative thinking whereby they have to search for better strategy to knock down opponents' balls (VR/L40-42)
Teamwork	The element of cooperation and team spirit is very obvious during the game carnival game (OC/L2), (VR/L30) Students portrayed good leadership quality and teamwork such as addressing the visitors and explaining to them about their innovation to the visitors (VR/L18-19) Students revealed true teamwork when they took turn to demonstrate the procedure of their game to the visitors who visited their station (VR/L51-52)

6. Conclusion

The study explored trainee teachers' learning experiences innovating traditional games in few games' interactions sessions and during the game carnival. It can be concluded that this program, which was organized by th Teacher Training Institute in Malaysia was able to enhance trainee teachers' creative and innovative thinking

skills. Trainee teachers described that they have learned on how to innovate games and it is possible to learn creativity through these types of activities as discussed by researchers (Balakrishnan et al., 2015). Learners are likely to remember and understand what they have learnt because of their direct involvement in solving the problems while creating and playing games (Pickard & Maude, 2014; Balakrishnan et al., 2015; Balakrishnan et al., 2016). Besides that, the presence elements of creativity in the process make the art of learning more meaningful for teachers in Teacher Training Institutes.

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Journal of Modern Education Review, ISSN 2155-7993, USA
December 2017, Volume 7, No. 12, pp. 894–905
Doi: 10.15341/jmer(2155-7993)/12.07.2017/008

http://www.academicstar.us

Psychosocial Effects of Physical Play in Early Childhood

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Abstract: This research aims to study the psychosocial effects of physical play among young children. It focuses on the effects of dodgeball games among 5–6 year old children at kindergartens. The Playability Scale of Young Children was used for the assessment of the 5-year-old class, with strong focus on one boy in the class, boy A. Through qualitative review, the process of becoming "fully playable" during physical play was considered from 3 aspects: "psychological and social effects", "dodgeball playing skills" and "the reaction of other children". As a result, the following 6 phases were seen in the dodgeball games of 5–6 year old children observed from October 2015 to March 2016. In the case of Boy A, it was found that each factor rose at different phases. Through the encounter with people (other children), things (ball, rules) and situations (trouble), he became "fully playable". It was also found that children could learn the game of dodgeball in a short time, but it took much longer for them to truly learn to work with others, learn from experience and come up with strategies. It was shown that physical play during early childhood has psychosocial effects and helps to nurture "a resilient mind and inquisitive body".

Key words: psychosocial effects, dodgeball games, Playability Scale of Young Children, 5–6 year old children

1. Introduction

The significance of physical play in early childhood as an active physical experience has been studied from various perspectives, such as the development of physical fitness, acquisition of motor skills, and obesity prevention. Lately, particularly in Japan, with the challenges such as the decrease in the amount of physical activity in children and in their level of physical fitness, attention has been focused on surveys and studies of measures for improving physical fitness and athletic ability. However, in recent years, it is thought that the effects of physical play are also expected to enhance a child's psychosocial aspects, such as developing positive attitudes, nurturing social development, increasing curiosity and motivation, strengthening resilience and improving mental health. However, this only happens when the physical activity is done as play.

Bateson and Martin (2013) defined principles of play as the following. It is a spontaneous occurrence, voluntary, having significance to the person playing. It is intrinsically motivated; that is, playing itself is the purpose. The person playing is not stressed and is playing under safe circumstances. It is not goal-oriented and the content is incomplete and a little exaggerated. The content is also repeatable. Takenaka (2017) added that goal-oriented physical play "for achieving a purpose" robs the essence of spontaneous play that children engage in

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for themselves and occurs naturally, and in fact this sort of play does not provide any fun. These findings suggest that it is the way of playing and the play process that has value rather than what is being played.

Thus, how should physical play for the purpose of strengthening psychosocial aspects be implemented in early childhood? Additionally, what processes occur during young children's physical play, during what kinds of play exist, and what do young children gain from it? This study attempts to identify the significance of physical play in early childhood from a psychosocial perspective.

2. Background

2.1 Prior Studies Investigating the Psychosocial Effects of Physical Play

In recent years, more researchers are focusing on the psychosocial effects of physical play in children rather than its benefits to the body. Burdette and Whitaker (2005) stated that promotion of 3a, which are "attention" (attentiveness that regulates inhibition and impulse control), "affiliation" (social cooperation skills such as cooperation with friends and self-awareness) and "affect" (positive emotions that promote improvement of feelings such as anxiety) could be expected through unstructured physical play in children. Furthermore, Biddle and Asare (2011) did various studies and report that physical play, including outdoor play, promotes improved self-esteem and the development of cognitive functions.

Additionally, in recent years, the term "playfulness" is frequently used in relation to physical play. In these studies, "playfulness" is defined as an individual's ability to create an environment that can change a situation to be more amusing and interesting (Barnett, 1990, 2007). Moreover, Lieberman (1977) and Barnett and Kleiber (1982) clarify that particularly in children, playfulness includes five elements: physical spontaneity (engaging voluntarily in physical activity through play), cognitive spontaneity (cognitively building new games and activities), social spontaneity (developing relationships with others flexibly on their own), sense of humor (bringing joy to those around them) and manifest joy (be filled with fun and joy).

These insights potentially provide evidence for recommending physical play. However, it is not clear what kinds of physical play and elements exert psychosocial effects. There is a need for research on the concept of playfulness as an intervening parameter to explain the influence of physical play on psychosocial factors.

2.2 Playability Scale of Young Children

Considering the issues discussed in the previous section, the authors have focused on the concept of being "fully playable" in order to shed light on the psychosocial effects of play in early childhood. The word "fully playable (a-so-bi-ko-mu)" was originally coined by Akita (2009). The circumstances for young children to be fully playable are formed through concentration, absorption, development, sustainment and utilization of materials as the child sees fit. In the Japanese day care settings, there is a somewhat common understanding of what it means to be fully playable. However, there had been no research on the specific circumstances of being fully playable. Therefore, we developed the Playability Scale of Young Children (Table 1) (Suzuki, 2016) and clearly defined the state of being of "fully playable." As a result, being fully playable was described in terms of 23 items and five factors including: "Smooth transition between reception, empathy and reaction", "Adaptability to surroundings", "Motivation for exploration", "Creativity and imagination with focus" and "Affinity and Cooperation". The high reliability and validity of the scale has been confirmed.

The Playability Scale of Young Children was used to study how the state of being fully playable was occurred in children aged 5 to 6 years, through the game of dodgeball as a form of outdoor physical play in the

context of free play at a kindergarten. By focusing on the perspective of factors underlying the state of being fully playable, and how this state changed across the phases, we attempted to shed light on the psychosocial effects of physical play.

Table 1 Playability Scale of Young Children (5 Factors and 23 Items)

	<Scale score> *1. Seldom observed (Doesn't apply at all)* *2. Not observed very often (Doesn't apply very much)* *3. Observed sometimes (Somewhat applies)* *4. Observed quite frequently (Applies)* *5. Observed very frequently (Applies very much)*
FI: Smooth transition between reception, empathy and reaction	
Group of items emphasizing the transition between acceptance of, sympathy towards and response to others	
r1: Listens to advice and opinions of others	*1 2 3 4 5*
r2: Acknowledges and adopts ideas of others	*1 2 3 4 5*
r3: Encourages, teaches and praises others	*1 2 3 4 5*
r4: Thinks and acts based on good understanding of motives and feelings of others	*1 2 3 4 5*
r5: Has fun with and blends in with others while sharing goals, experiences and ideas	*1 2 3 4 5*
FII: Adaptability to surroundings	
Group of items focusing on activeness towards searching for play and flexibility towards the environment	
s1: Enjoys meeting new things, people and ideas	*1 2 3 4 5*
s2: Finds renewed interest in familiar things, people and ideas	*1 2 3 4 5*
s3: Enjoys change	*1 2 3 4 5*
s4: Facial expressions and physical movements are lively	*1 2 3 4 5*
FIII: Motivation for exploration	
Group of items describing situations in which child explores and investigates various events and interests in a sustained and independent manner	
e1: Sets a goal and works at it	*1 2 3 4 5*
e2: Doesn't give up until reaching a certain level of fulfillment	*1 2 3 4 5*
e3: Sets or chooses challenging tasks	*1 2 3 4 5*
e4: Attempts to follow through without help	*1 2 3 4 5*
e5: Decides own role and carries it out responsibly	*1 2 3 4 5*
e6: Tries to motivate one's self	*1 2 3 4 5*
FIV: Creativity and imagination with focus	
Group of items focusing on creativity and imagination to expand play, with the focus on the ability to converge it into a certain direction rather than let it expand discursively	
c1: Exercises ingenuity and makes suggestions in order to realize one's ideas	*1 2 3 4 5*
c2: Recalls past experience and applies it to current play	*1 2 3 4 5*
c3: Makes good use of materials and resources through trial and error	*1 2 3 4 5*
FV: Affinity and Cooperation	
Group of items observing children's behavior to create or belong to groups, as well as the attempt to make contribution to the group,which both derive from one's self-esteem	
a1: Enjoys competition and winning/losing	*1 2 3 4 5*
a2: Creates rules and plans in order to reach a goal	*1 2 3 4 5*
a3: Takes part in serious discussion in order to share ideas and challenges with others	*1 2 3 4 5*
a4: Invites others to join in and organizes groups	*1 2 3 4 5*
a5: Others are naturally caught up in the child's play	*1 2 3 4 5*

2.3 Significance of Studying

2.3.1 Dodgeball Games

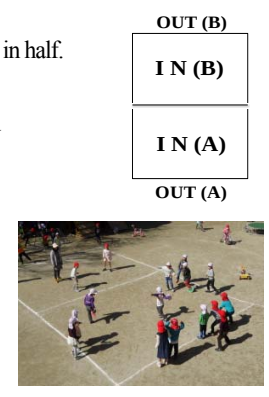
The reason dodgeball game was chosen for this study is because it is a form of outdoor physical play that includes group play and requires learning certain amount of motor skills. Moreover, we believed that the characteristics of dodgeball played within the free play time that children could play freely and subjectively, lent typicality to results of validation of the psychosocial effects of physical play. Table 2 describes typical dodgeball games that are played in early childhood in Japan during free play time. In Japan, dodgeball games are typically introduced to children as play around the age of 5 and 6.

Studies on dodgeball games have been conducted in research on teaching materials for elementary school physical education curricula (Goto & Ikeda, 2005; Hidaka & Goto, 2004) and on the process of development of the throwing movement in early childhood (Kato, 2013; Kitajima & Horita, 2011). However, studies on dodgeball games with focus on its psychosocial aspects is scarce. A rare example is the research on the significance of dodgeball games as an interactive play between caregivers and children (Yajima, 2011).

Meanwhile, in the United States, from around 1986, the educational effect of dodgeball games were questioned in some instances. Around 2000, the playing dodgeball games were not encouraged in elementary schools, and it was even prohibited in some schools in states such as Maine, Florida, and Maryland. It was even prohibited officially in Austin, Texas. At the basis of this trend was the belief that dodgeball games exercised simple motor skills such as throwing, hitting, and catching, and as a result children starting out with poor abilities were hit by the ball quickly and eliminated from the game. It was considered to be a game with many opportunities to lose. Additionally, since there was great anxiety over injuries, it was thought that it had little significance from either a physical education standpoint or a psychosocial standpoint (Tanimoto, 2016). As can be seen from the American slang terms for dodgeball games, such as killerball, warball and murderball, it is perceived to be an extremely aggressive sport. More recently in Japan, a blogger questioned the significance of dodgeball games from a similar standpoint and claimed that dodgeball games were violent and the breeding ground for bullying and that it should be stopped (Katsube, 2015), which caused heated discussion on the Internet.

Table 2 Definition of "Dodgeball Games" (Dodgeball Games Played in Japan)

- Played outdoors.
- A rectangular court is drawn on the ground (approximately 10m x 20m) with a line in the center dividing the court in half.
- One rubber ball is used.
- Players are divided into two groups and are positioned in the 'in -court" of each team. 2 or 3 players are positioned in their "out-court" at the start of the game, which is on the outside of the opponent's "in-court."
- Players in the in-court throw the ball and try to hit opponents in the opposite in -court.
- Opponents in the in-court can either dodge or catch the ball.
- Players are out if they are hit by a ball (except the head) and must go to their out -court.
- Players in the out-court are able to get back in the in-court if they successfully hit an opponent in the opposite in-court. (Resurrection rule)
- Win or loss is decided by how many players are remaining in each in -court at the end of the game.



However, we know that the rules and playing style of dodgeball games in the US (Fagoganis, 2010) (Zakrajsek, 2013a, 2013b) are quite different from those played by most young children in Japan. The biggest difference, as shown in Table 2, is the existence of the "out-court" in dodgeball games played in Japan. There is

also the “resurrection rule”, whereby even if players are sent to the out-court, they can return to the in-court if they successfully hit an opponent, thus overcoming the problem of “losing early”. Moreover, another big difference is that in the dodgeball games in the free play among young children, every rule is not implemented absolutely, and it is even encouraged that children create and change each rule. Moreover, young children have not reached the stage where they have developed the motor skills to be able to throw a strong ball. Their catching action is also immature. Dodging is the primary action, and thus it is unlikely to be an unfair contest. This makes the dodgeball game a highly flexible form of play.

Therefore, we chose dodgeball games played by 5–6 year old children at kindergartens and nursery centers as forms of outdoor physical play during free play to asses the psychosocial effects of physical play.

3. Research Methods

3.1 Observation Period

October 2015 – March 2016.

3.2 Observation Object

T Kindergarten, Aichi, Japan

Dodgeball games between 5–6 year old boys and girls

Focus on a 5-year-old boy (Boy A: A low scorer on the Playability Scale in October 2015)

We conducted individual observations on some of the children with high frequency of participation in the dodgeball games during free play, and analyzed Boy A, who had been observed for most of the days. Boy A’s rating on the Playability Scale of Young Children (Table 1) was the lowest at the start among the children participating in the dodgeball game.

3.3 Procedure

(1) Dodgeball games were recorded once a week during free time in the morning. Then field notes were created.

(2) Boy-A’s actions during dodgeball games were evaluated using the Playability Scale of Young Children. The authors, the homeroom teacher, and the assistant homeroom teacher performed these evaluations.

(3) Evaluation results were explained from psychosocial aspects, relationship with other children and physical aspects (throw, catch, dodge). The authors, the homeroom teacher, and the assistant homeroom teacher performed these evaluations.

(4) Based on Boy A’s quantitative and qualitative transformation, we studied the manifestation and transformation of becoming fully playable in physical play.

4. Results

4.1 Phases of Involvement Seen in Dodgeball Games of 5–6 Year Old Children

Based on the development of the dodgeball games during free play observed in the six months of this study, the involvement of children could be categorized into six phases.

(1) Caregiver intervention phase (2015.10.8-2015.10.22): Caregivers serve as a model showing dodgeball game rules and techniques.

(2) Caregiver assistance phase (2015.10.29-2015.11.11): Children are able to run the game without help from

caregivers and even create rules on their own to deal with problems.

(3) Initiative-taking phase (2015.11.25-2015.12.7): Children are able to run the game without help from caregivers and even create rules on their own to deal with problems.

(4) Early trial-and-error phase (2015.12.15-2016.2.1): Children start the game and work together to come up with ideas and run the game.

(5) Late trial-and-error phase (2016.2.4-2016.2.15): Children often give each other orders in order to run the game smoothly.

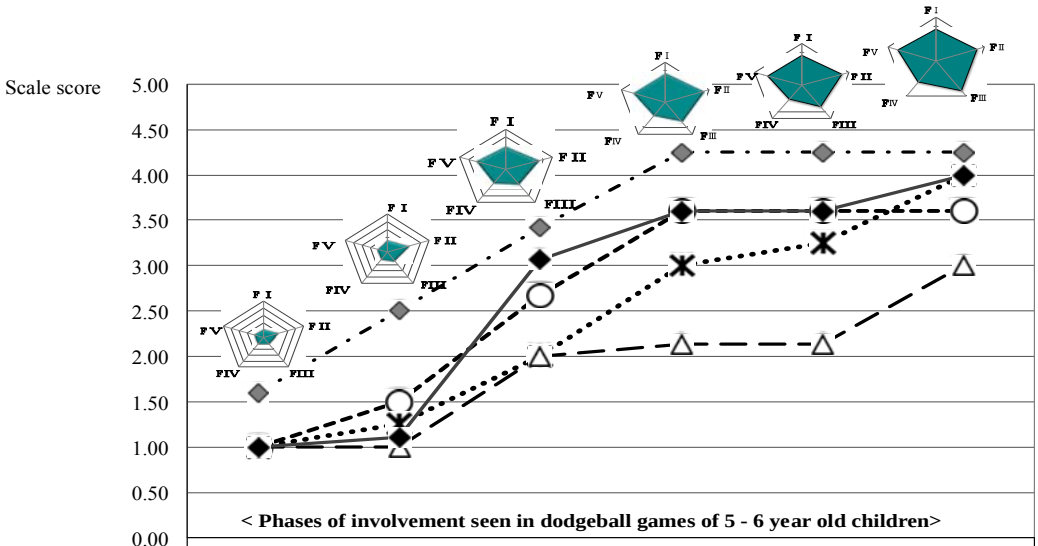
(6) Game development phase (2016.2.18-2016.3.2): The game is run smoothly with children on both teams coming up with individual and group strategies in order to win the game. Children experience the joy of the game while playing together.

4.2 Evaluation of Boy A's Progress through the Phases Using the Scale Scores and Three Aspects

Based on the phases of involvement in dodgeball games of 5–6 year old children described in the previous section, we calculated Boy A's score using the Playability Scale of Young Children at each phase. The factor score in each phase was calculated as the average of items within each factor for all days observed within each phase. Figure 1 shows the scoring trend. Additionally, the scoring procedure considered physical aspects, psychosocial aspects and the relationship with other children as shown in Table 3. Each phase is described in detail below.

4.2.1 Caregiver Intervention Phase

In this phase, for "FII: Adaptability to surroundings", Boy A scored two points for "s3: Enjoys change", "s4: Facial expressions and physical movements are lively" and 1.6 points for "FII: Adaptability to surroundings". He scored one point for each of the other four factors.



<Playability Scale of Young Children>	Caregiver intervention phase	Caregiver assistance phase	Initiative-taking phase	Early trial-and-error phase	Late trial-and-error phase	Game development phase
F I : Smooth transition between reception, empathy and reaction	1.00	1.50	2.67	3.60	3.60	3.60
F II : Adaptability to surroundings	1.60	2.50	3.42	4.25	4.25	4.25
F III : Motivation for exploration	1.00	1.25	2.00	3.00	3.25	4.00
F IV : Creativity and imagination with focus	1.00	1.00	2.00	2.13	2.13	3.00
F V : Affinity and cooperation	1.00	1.10	3.07	3.60	3.60	4.00

Figure 1 Change of Scale Score in the Playability Scale of Young Children (Boy A)

Table 3 How Boy A Progressed through the Phases Were Evaluated Using the Scale Scores and Three Aspects

Phase	Physical aspects	Psychosocial aspects	Relationship with other children
Caregiver intervention phase	Throw ×	- Runs after and fools around with other children instead of going after the ball.	- Other children are too occupied to get involved with Boy A.
	Catch ×	- Inattentive and walks into the opponent's court when in the "out -court" of his team.	
	Dodge ×		
Caregiver assistance phase	Throw ×	- Asks the teacher to draw the court and tries to start a game on his own.	- Children's reaction to Boy A varies. (Some ignore him while others complain .)
	Catch ×	- Only few children join the game. (Others avoid getting involved with Boy A).	- The rock-paper-scissors rule is born to resolve fights over the ball. (The winner gets the ball.)
	Dodge ×	- Doesn't leave the court even when hit by the ball.	
		- Sulks easily.	
Initiative-taking phase	Throw △	- Invites other children to play the game together.	- Complains directly to Boy A when he plays foul.
	Catch ×	- When sent to the out-court, tends to wonder around and attempts to return to the in-court.	- Insistent on the rock-paper-scissors rule.
	Dodge ×	- Unable to focus on the game when there are many players and gets bored.	
Early trial-and-error phase	Throw △	- Able to stay involved for the entire game (about an hour).	- Complains directly to Boy A when he plays foul.
	Catch ×	- Is able to wait a little when sent to the out -court.	- The utmost priority given to the rock -paper-scissors rule. (Even when one team clearly had the ball f irst, children resort to the rock-paper- scissors rule.)
	Dodge △	- Tries to sneak back into the in -court sometimes.	
Late trial-and-error phase	Throw △	- Knowing he can "hit an opponent and get back in , " he is able to wait in the out-court.	- Calmly complains or tries to persuade Boy A when he plays foul.
	Catch ×	- Starts to feel the sting of defeat.	- Less relentless fighting over the ball.
	Dodge △	- Filled with a sense of exaltation.	
Game development phase	Throw ○	- Always plays on the forefront of the game.	- Points out Boy A's wrong-doing more specifically: "Don't wonder around there. Don't walk ahead. You're in the way." "Don't leave the court when you're not hit".
	Catch ×	- Watches the ball and aggressively goes af ter it.	
	Dodge ○	- Able to accept his loss when losing in rock -paper-scissors.	
		- Tells other students to hit an opponent and cheers them on.	
		- Shouts for joy screaming "Great!" "Yeah!" and "Wow!"	

During this phase, Boy A had developed very few motor skills for throwing, catching, and dodging required in dodgeball games. He mainly ran after and got in the way of the other children who were chasing the ball. He was fooling around by chasing the children rather than the ball. When he was in the in-court, he stood eagerly in the forefront and was immediately hit by the ball. After that, he reacted to balls that came his way immediately after he went to the out-court, but this did not last. He would quickly sit down or go to a different place. After a while, he was observed wobbling into his opponent's court or his team's in-court. However, the other children were investing their full energies in what they were doing and were not concerned about Boy A; hence, there were almost no complaints about Boy A's actions. During this period Boy A stuck around because he wanted to be with everyone, but most of the time he was not going along with the flow of the game. His desire and ability to concentrate depended solely on whether he was enjoying or not enjoying what was right in front of his eyes.

4.2.2 Caregiver Assistance Phase

During this phase, on most days, Boy A was given a score of two or three points in all four items in "FII Adaptability to surroundings", and his "FII Adaptability to surroundings" score rose to 2.5 points. Boy A was still immature in his throwing, catching, and dodging skills, but he was observed yelling "Watch out!" in a loud voice if it seemed as though a child was going to be hit by the ball. He began to watch and chase the ball during the game. Moreover, in the mornings, as soon as he arrived at the kindergarten, he sometimes asked the teacher to draw out the lines for a dodgeball court and started the game on his own. He could be seen enjoying dodgeball games.

Additionally, "r1: Listens to advice and opinions of others" in "FI: Smooth transition between reception,

empathy, and reaction" could be observed every now and then in the latter half of this phase. His score for "FII: Smooth transition between reception, empathy, and reaction" increased to 1.5 points. In the dodgeball games during this phase, there emerged instances of children fighting over the ball. Once they started fighting over the ball, it wasn't easy to settle, and this caused games to be interrupted many times. When asked by their teacher, "What should be done?" the children came up with the rock-paper-scissors rule as a solution, saying "The side that wins in rock-paper-scissors gets to throw the ball." Sometimes the teacher intervened when necessary, such as when there was some conflict, but the children gradually started to run the game in their own way. Boy A did not reach the point of joining the discussion, but he watched the other children and followed the rules to a certain extent.

On the other hand, however, in some instances when Boy A attempted to start a game of dodge ball, we observed situations when other children didn't join saying, "We want to play dodge ball but not with Boy A." To the other children, Boy A was still a nuisance in the game. During this phase, Boy A would sit down on the ground and sulk when he was hit by the ball. He would complain to the teacher and the other children about his skinned knees more than necessary. Moreover, he sometimes did not go to the out-court when he was hit by the ball. Scenes where he was dragged by his arm by other children and forced to go to the out-court were frequently observed. He was unable to create an inviting atmosphere for others to join. This was the cause of his low score of 1 in "FV: Affinity and Cooperation".

4.2.3 Initiative-taking Phase

In this phase, Boy A's affect in "s4: Facial expressions and physical movements are lively" became continuous, and his score in "FII: Adaptability to surroundings" rose to 3.42. Full of elation, he jumped at the very front line while he waited for the ball, and asked for the ball with large movements. Moreover, compared to the previous phase, his "FV: Affinity and Cooperation" score rose rapidly to 3.07. This was because instances of "a4: Invites others to join in and organizes groups" were found. Many such instances were observed where after arriving at the kindergarten he would peek into classrooms other than his own and invite other children to play dodgeball games. In this phase, Boy A's movement became fairly dynamic, and he started to manage to dodge the ball. However, he was almost unable to catch balls coming toward him, could only throw the ball using both hands which quickly fell downwards and was unable to hit anyone. Even so, his body showed that he was brimming with happy feelings. Additionally, he received scores of 4 points in "a1: Enjoys competition and winning/losing" on many days. We began to observe that he jumped excitedly in the in-court while waiting for the ball, and when he was hit by the ball, his feelings of frustration showed through his entire body. Even after he was sent to the out-court, he would ask for the ball and complain that "No one will give me the ball". He was only concerned about immediate wins. This kind of thinking is not limited to Boy A. During this phase, all children aged 5–6 years were only concerned about immediate wins and not the final outcome of the game

Meanwhile, the low scores of 2 points for "FIII: Motivation for exploration" continued. In this phase, Boy A was able to concentrate when playing games with a relatively small number of players. However, when there were a large number of players, we observed scenes where he had fewer chances to play and he would lose interest and sit down on the spot. When he was sent to the out-court, at first he endured it, but later he started to wander around the out-court and then attempted to enter the in-court because he was not skilled in catching the ball. There was no decrease in this repeated pattern. When he was told by the other children, "You're not going to the out-court even though the ball hit you", "You are returning to the in-court even though you did not hit anyone", and "If you will not follow the rules you might as well not play", he followed the rules reluctantly. These were the

causes of his overall low scores in the items under “FIII: Motivation for exploration”.

On the other hand, in this phase the other children began to notice Boy A’s tricks, but they did not pay all that much attention to them. In any case, the children insisted on the rock-scissors-paper rule, and concentrated on the flow of their game. Because of this, it seemed that they unconsciously had the sense that paying too much attention to Boy A delayed the game and made it boring.

As described above, during this phase, Boy A’s fully playable state did not continue for long, because his own feelings and needs conflicted with his involvement with other children and the flow of the game.

4.2.4 Trial-and-error Phase

Phases in free play dodgeball games of 5–6 year olds are divided into early trial-and-error phase and late trial-and-error phase depending on the number of problem-solving scenes. However, there were few significant changes between the two phases according to Boy A’s scale scores. Therefore, observations were made of the entire trial-and-error phase.

In this phase, Boy A’s score rose for four factors other than “FIV: Creativity and imagination with focus”. In “FII: Adaptability to surroundings”, we began noticing him having fun with other children and enjoying the atmosphere at that time and place. Additionally, he began receiving a score of 4 in “r5: Has fun with and mingles with others while sharing goals, experiences, and ideas” under “FI: Smooth transition between reception, empathy, and reaction”. By this time, Boy-A began to play dodgeball games, even with many players, for the full hour without leaving the game and he became able to continue playing while enjoying the atmosphere of the game.

Furthermore, there was a pronounced increase in his score for “FIII: Motivation for exploration” at 3.25 points. This is because he scored 4 points in “e1: Sets a goal and works at it”, “e3: Sets or chooses challenging tasks” and “e5: Tries to motivate one’s self”. It was thought that this increase was influenced by his athletic skill improvement. He was still throwing using both hands but was able to throw upwards. Moreover, there were times he could get away from the ball so that he would not be hit. Even when he was sent to the out-court, he had confidence that he could make the shot, and he started waiting patiently and doing his utmost to chase the ball if it came near him. He was starting to match his actions with the flow of the game. Through this, we began to observe his desire to keep going, his ability to give up when things didn’t go his way and his attempts to negotiate various conflicts with other children. Evidently, he did not entirely stop nonchalantly trying to move from the out-court to the in-court, and he continued to cause trouble. But we observed that even when he lost the rock-scissors-paper rule, he gave up the ball without sulking and passed the ball to the other child.

4.2.5 Game Development Phase

During this phase, Boy A scored 3 points on “FIV: Creativity and imagination with focus”, on which until then he had never scored above 2 points, and his score for “FIII: Motivation for exploration” rose to 4 points. During this phase, dodgeball was refined as a game, and many of the children began to worry about winning. Everyone could share the joy of playing for the same goal of winning. During this time, Boy A also began to care about the outcome of the game. Because of this, he began to think of himself and as a member of the team. His scores on “c1: Exercises ingenuity and makes suggestions in order to realize one’s ideas” and “e5: Decides own role and carries it out responsibly” improved noticeably.

Furthermore, Boy A was able to run away so as to dodge the ball, and so he could align even more with the game and the movements of the other children. Additionally, he went immediately to the out-court after he was hit by the ball in the in-court. Even in the out-court, he began to watch the movement of the ball closely and attempted to catch the ball. Moreover, he began to instruct and cheer other children, saying “Make a hit”. He

would spontaneously clap when another child made a good shot, and he would shout with joy, yelling “Great”, “Way to go” and “Wow”. We began to observe him patting the heads of other children who had been hit to make them feel better. He began to score highly on “a1: Enjoys competition and winning/losing” of “FV: Affinity and Cooperation”. In addition, his average score on all items of “FI: Smooth transition between reception, empathy, and reaction” became higher.

Even so, Boy A did some arbitrary things that were not in line with what the other children wanted. He was sometimes criticized or instructed by the more skilled players, who said things like, “Do not wander around, and do not go to the front. You are in the way,” and “Don’t go out. You haven’t been hit.” Even so, he began to conform to a certain extent. Boy A still continued to cause some problems, but we observed him at times controlling his emotions and continuing to be in a fully playable state as a result.

5. Discussion

This study involved dodgeball games played by 5–6 year old children during free play at kindergartens as forms of outdoor physical play. The purpose of the study was to identify the psychosocial effects of physical play in early childhood. Using the Playability Scale of Young Children, we analyzed how the “fully playable” state appears during dodgeball games played during free play among 5–6 year old children, its underlying factors, and how this state changes. As a result, we observed the transformation of Boy A during the six phases of involvement. The following considers the psychosocial effects of physical play based on our findings.

If these were dodgeball games played as a sport, coaches would probably first organize a game system, and then execute it with a high level of structure. By contrast, the dodgeball games observed in this study was first presented with minimum level of structure by the teachers. The children gradually shaped it through trial and error. We observed in children creative ingenuity while cooperating with others in the latter part of the phases, but this also indicates that organizing it into the form of a structured game takes a considerable amount of time. Moreover, the trial and error in the game had processes involving diverse challenges for young children.

Coakley (1982) compared the way of development of activities in children who enjoyed pure physical play with that of children who belonged to competitive sports teams. In the former group, the participants themselves decided things. By contrast, in the latter group, decisions were made according to roles and relationships. Concerning goals and meanings, the former varied on an ad hoc basis while the latter were decided and static. Regarding rules, the former fluidly created rules, while the latter had highly formal and specialized rules. Overall, common understanding among members was valued in the former group, while the latter depended on control and obedience. Moreover, the degree of freedom was high and varied in pure physical play. By contrast, competitive sports were limiting and lacked flexibility. Based on these findings, Sawae et al. (2014) claimed that pure physical play and competitive sports are polar opposites, and that there is consistent difference in the degree of freedom. They concluded that it is only during pure play and not competitive sports that free and self-motivated play can occur and that play and sports are different things to children.

In the free play dodgeball games in this study, rule creation by children to solve issues, children coaching one another in order to enjoy the game in their own way, and children putting their heads together to come up with various ideas to solve issues were observed. This is proof that dodgeball games during free play function as pure play. Moreover, it was shown that during free play dodgeball games, the context was created for trial and error and challenges among children, and that during physical play it is possible to experience processes of

self-determination, voluntary observance of rules, cooperating with others and creative ingenuity.

It was also shown that the process of young children becoming "fully playable" was centered around the children themselves. In the case of Boy A in these dodgeball games, at first, the "adaptability to surroundings" factor increased. In the initiative-taking phase, the "smooth transition between reception, empathy, and reaction" and the "affinity and cooperation" factors increased. During the trial-and-error phase, the "motivation for exploration" factor increased. Finally, in the final "game development phase," behaviors related to the "creativity and imagination with focus" factor started to appear. In this way, each factor rose in different phases. It can be expected that other types of physical play will show different patterns of increase, but it can be said that these factors can be used to evaluate psychosocial effects of physical play in early childhood.

From the above results, we observed a psychosocial structure whereby the fully playable state was born and deepened when the children encountered people (other children), things (balls and rules) and situations (issues). In the different scenes, we observed that the children ascertained the meaning of people, things, and situations, and explored what was important and enjoyable for them. During this process, the young child (Boy A) built up a "resilient mind" that will make his emotions and ideas flexible. Moreover, the athletic skills required to play dodgeball were acquired through daily play, and children used these skills to better respond to people, things, and situations. This process built up an "inquisitive body."

Figure 2 is a model diagram showing the psychosocial effects of physical play in young children and how it builds up a resilient mind and inquisitive body. When children encounter people, things and situations during free play, they reach the state of being "fully playable." Physical play is an opportunity to raise a resilient mind and inquisitive body, and this is an important psychosocial effect of physical play.

In the future, we would like to continue our study of the psychosocial effects of physical play in early childhood using other types of play besides dodgeball games.

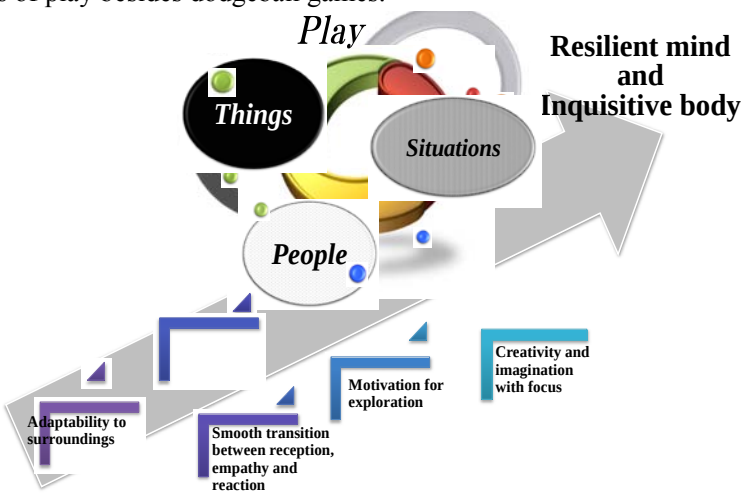


Figure 2 Psychosocial Effects of Physical Play in Early Childhood

Acknowledgements

This work was supported by JSPS KAKENHI Grant Number 17K01633.

Disclosure Statement

No potential conflict of interest was reported by the authors.

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Journal of Modern Education Review, ISSN 2155-7993, USA
December 2017, Volume 7, No. 12, pp. 906–913
Doi: 10.15341/jmer(2155-7993)/12.07.2017/009

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Education, Ethics and Health: Learning to Care from the Optics of Oncological Patients

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Abstract: The present study is part of an educational sciences PhD program and aims to evaluate the educational process that can result from the suffering process experienced by oncological patients. The main purposes of the study are: build up in the oncological patients the capacity to acquire knowledge due to their suffering experience related to the disease; and be able to transfer the obtained knowledge to formal and informal caregivers. We found that patients do not always know their ability to manage their difficulties about the disease and its real care needs, a situation which results in a lack of knowledge on the part of formal caregivers, about the experience that patients have of their disease, with order consequences technical and ethical. In this paper, the salutogenic perspective Antonovsky; and the ethics of care in the health context are the theoretical assumptions. We consider that each oncological patient has an educator status, as he/she can teach and is, more over, the one who can teach not only the possible direction of the disease, but the specifics of the illness; these specifics as the possible direction of the disease, are inextricably linked to what Antonovsky appointed as internal sense of coherence, for which evaluation he built the SOC questionnaire. For their turn, the ethics of care, according to Kemp and Rendtorff, defines four ethical principles in the context of health and medical research: autonomy, dignity, integrity and vulnerability. These principles are inseparable and must be understood in a general framework of solidarity and responsibility.

Key words: education, health, SOC, oncological patients

1. Introduction

This communication is part of a doctoral Project in education sciences at the Trás-os-Montes e Alto Douro University (Portugal). The theme of this work is the education in the suffering of oncological patients in a perspective of education throughout the life and whose purposes are: (1) to promote in the oncology patients the capacity to withdraw learning from their suffering experience by the illness and (2) to transfer this knowledge to

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the learning of care by formal and informal caregivers.

The oncological patient — each oncological patient — has something to teach, because the fact of being alive refers to experiences lived in his daily life which can serve as learning to be transferred to others, whether they are also patients or caregivers. The motivation for the study comes from the empirical observation that patients are not always aware of their capacity to manage their difficulties about the illness and its real needs of care. This situation results in a lack of awareness among the formal caregivers about the experience that the patients have about their disease with technical and ethical consequences. In theoretical terms the work sought to be based on the salutogenic perspective purposed by Aaron Antonovsky: as well as in the ethics of caring in the context of health. We consider that each oncological patient has an educator status because he can teach and he is, moreover, who can teach not only the possible meaning of the illness but also the specificities of the disease: these specificities as the possible meaning of the disease are inseparable from what Antonovsky (1978) has designated internal sense of coherence, for which he constructed the SOC questionnaire. This article sought to focus in the evaluation of the Internal Sense of Coherence of individuals who have been affected by cancer (whether or not they are cured) in order to identify their capacity to cope with this stressful situation. Regarding the ethics of caring, we rely on Kemp and Rendtorff (2008). Noddings (2003), Torralba I. Roselló (1998) who sought to understand caring as ethical principles.

Specifically, it was sought to know/understand the extent to which the interviewed (under treatment or cured) were able to deal with the illness in order to understand it, manage it and give meaning to this coping situation, analyzing the Internal Sense of Coherence by means of the SOC questionnaire.

2. Methodology

In this article we work with the methodology of SOC — Internal Sense of Coherence, where it was used the SOC Scale (Internal Sense of Coherence) proposed by Aaron Antonovsky, following its validation to the Brazilian Portuguese presented by Dantas (2007). “The instrument proposed by the author to evaluate the construct comprises 29 items that evaluate the orientation of the individual on various issues related to his life” (Dantas, 2007, p. 1). The aim of this study was to test the metric properties (validity and reliability) of the participants based on the Antonovsky’s Sense of Coherence Questionnaire (SOC).

Twelve (12) previously selected patients (who were or were not receiving treatment, cured or monitored) were interviewed. Participants were from both sexes, any degree of education, age, race or color but fulfilling the following criteria: to be an oncological patient; to have reconfigured his life after the diagnostic and living with cancer; to be indicated by an association, doctor or hospital accompanying him; be literate; to reside in Minas Gerais, Brazil; to feel like sharing his experience with other people. The questionnaires were delivered and answered without the interference of the researcher and the interviewee had to interpret the meaning of the questions. The period of data collection occurred between October 2015 and March 2016. For socio-demographic and clinical characterization were inserted questions regarding: age, sex, instruction degree, profession and type of cancer.

After the collection of the questionnaires the treatment of the information began. The data collected were coded, eliminating all personal information associated with them. The data were processed and analyzed by the Excell 2000 program. The variables were analyzed in a descriptive way, being calculated the mean and the standard deviation for numerical variables.

Participant selection procedures and SOC questions were previously submitted to the CEP — Comitê de Ética em Pesquisa da Universidade FUMEC de Belo Horizonte/MG (Ethics Research Committee of the FUMEC University of Belo Horizonte/MG) and to the Comissão Ética da Universidade Trás-Os-Montes e Alto Douro (UTAD) (Ethics Commission of the Trás-Os-Montes e Alto Douro University) for analysis and approval.

3. Results

3.1 Socio-demographic and Clinical Characterization of the Participants

In the present study 12 people agreed to participate, answering to the research questions. Among the 12 individuals that participated in the study, 8 (66.7%) were female and 4 (33.3%) were male. The mean age was 56.67±11.7 (minimum 31 and maximum 75). All participants had formation in higher education and most of them were teachers. Four participants (33.3%) were in treatment phase of the disease when they participated in the research, 4 (33.3%) were under follow-up and 4 (33.3%) answered being cured. The main type of cancer related to the participants was the intestine (5), followed by breast (3). The data are shown in Table 2.

Table 2 Socio-Demographic and Clinical Data of the Study Participants

Participant	Sex	Age	Profession	Disease Condition	Cancer Type
1	M	66	Teacher/Doctor	Healed	Intestine, kidney and thyroid
2	M	57	Businessman/ Teacher	Healed	Intestine
3	F	58	Teacher/Geographer	In treatment	Breast
4	F	62	Housewife/Teaching	In treatment	Breast, lung, hair
5	F	54	Teacher	In treatment	Myeloma
6	F	45	Teacher/Pedagogue	In follow-up	Intestine
7	F	49	Teacher/Chemistry	In follow-up	Thyroid
8	F	54	Teacher/Architect	In follow-up	Stomach
9	F	31	Environmental Engineer	In follow-up	Skin
10	M	59	Teacher/Psychologist	Healed	Intestine
11	M	70	Teacher/Engineer	In treatment	Lymphoma
12	F	75	Psychologist	Healed	Breast

3.2 Descriptive Analyzes of Antonovsky's (SOC) Sense of Coherence Questionnaires

Anotonovsky's Sense of Coherence Questionnaire (SOC) is divided in three components: understanding (Nos. 1, 3, 5, 10, 12, 15, 17, 19, 21, 24 and 26), handling (management) (Nos. 2, 6, 9, 13, 18, 20, 23, 25, 27 and 29) and meaning (investment) (Nos. 1, 4, 7, 8, 11, 16, 22 and 28). Your descriptive analysis can be done by the sum total of answers obtained (interval 29 to 203) or by the average of the items (interval 1 to 7). The possible interval of total SOC score is ranged from 29 to 203, in this research the interval ranged from 107 to 127. The results are presented in table 3. Regarding the value of the total SOC score it was possible to observe a median from 150 and a mean of 147.08±16.30. This result is shown above the median interval between 29 and 203 (116), that is, individuals have an Internal Sense of Coherence medium to high, which helped them to cope with stress situation they have been through or are passing through.

The item "meaning" was the one that presented the highest average for the participants of the study (5.77±1.26), denoting the capacity of each one to perceive that life events make sense and therefore find reason to

invest in them their energy. On the other hand the item "understanding" was the one that showed the lowest mean (4.24±1.80) demonstrating that the interviewees can't apprehend the internal and external stimuli as ordered, consistent, structured and clear information. The total mean of the 29 items that composed the questionnaire was 5.07±1.75 with a median of 5.

Table 3 Descriptive statistics of the Antonovsky's Sense of Coherence Questionnaire (SOC) by Component and Total of Questions

Component	Median	Mean±SD
Understanding	5	4.24±1.80
Handling (management)	6	5.43±1.68
Meaning (investment)	6	5.77±1.26
Total of 29 items	5	5.07±1.75
Sum of 29 items	150	147.08±16.30

Regarding the analysis according to the questions of each component, for the "understanding" component the question of life in the future (question 17) was the one that presented the lowest mean score in the sample studied (3.08±1.56) while the related one to the positioning of life events (question 26) was the one that presented the highest score (Table 4). This demonstrates a change in understanding what is important, where the interviewees show more importance to the moment in which they are living, seeing problems as they are without fantasizing or creating expectations. However, the results in general show that this cognitive component has remained stable, sometimes demonstrating that the individual has become more shaken or has felt more confident in facing the stimuli to which he was exposed.

Table 4 Descriptive statistics of the Antonosky's Sense of Coherence Questionnaire (SOC) in relation to the "Understanding" Component

Component-Understanding	Median	Mean±SD
1. When you talk to people do you have a feeling they don't understand you?	4	4.33±1.37
3. Think of people with whom you have daily contact, in addition to those with whom you feel closest. How well do you know them?	5	4.83±1.34
5. Has it happened in the past that you surprised yourself with people you thought you knew well?	3.5	3.83±1.53
10. In the last 10 years, your life has been:	4.5	3.67±2.02
12.Have you the feeling of being in an unusual situation and not knowing what to do:	5.5	5.17±1.64
15. When you face a difficult problem, the choice of a solution is:	5	4.5±2.02
17. You life will be in the future:	**3**	**3.08±1.56**
19. Do you have conflicting ideas or feelings?	3	3.5±1.98
21. Have you ever had feelings inside you that you would rather not feel?	3	3.58±2.12
24. Did you ever feel that you didn't know exactly what was about to happen?	5	4.5±1.51
26. When something happens, you usually:	**6**	**5.67±1.30**

For the "handling" (management) component that refers to the perception that each one has that the resources are available and are suitable to respond to the requirements needed by the stimulus situation, the results show that questions 9 to 13 were those that presented higher scores (6.33±0.65 and 6.33±0.78), while the question 6 was the one with the lowest score mean (3.42±1.73) (Table 5). Regarding to the component "meaning" (investment capacity) that refers to the amplitude in which the person feels that life makes sense emotionally that is worth investing energy in problems and needs, all the questions showed values above five, indicating a high sense of

coherence in regards to this component (Table 6). It's worth emphasizing that interpretation must be made according to the response options of each question and with its positive or negative direction but high values always indicate a strong sense of coherence.

Table 5 Descriptive Statistics of the Antonovsky's Sense of Coherence Questionnaire (SOC) in Relation to the "Handling" Component

Component-Handling	Median	Mean±SD
2. In the past when you had to do something that depended on the cooperation of others, you had the feeling that:	5	4.92±1.98
6. Has it ever happened to people you were counting on to disappoint you?	**3**	**3.42±1.73**
9. You have the feeling of being wronged:	**6**	**6.33±0.65**
13. What best describes how you see life:	**6.5**	**6.33±0.78**
18. When something unpleasant happened in the past, your tendency was:	6	5.5±1.69
20. When you do something that gives you a good feeling:	7	6.25±1.14
23. Do you think there will always be people you can count on in the future?	7	6.08±1.38
25. Many people — even those with a strong character — sometimes feel like "losers" in certain situations. How often have you felt like this in the past?	4	3.83±1.40
27. When you think about the difficulties you have faced in important aspects of your life, you have the feeling that:	6.5	6.25±0.97
29. How often do you have the feeling that you can't keep the situation under control?	5.5	5.33±1.56

Table 6 Descriptive Statistics of the Antonovsky's Sense of Coherence Questionnaire (SOC) Related to the "Meaning" Component

Component-Meaning	Median	Mean±SD
4. You have the feeling that you really do not care what is going on around you:	6	6.0±1.13
7. Life for you is:	5.5	5.25±1.86
8. So far his life has been:	**6**	**6.33±0.65**
11. Most of the things you plan to do in the future will probably be:	**5**	**5.17±1.19**
14. When you think about life, you often:	7	5.92±1.73
16. Doing things from day to day is:	5.5	5.42±1.24
22. Do you feel that your life in the future will be:	6	6±0.85
28. How often do you get the feeling that the things you do daily in your life have little meaning?	6	6.08±0.67

3.3 Results Obtained by Comparing Different Groups

The results obtained by the comparing the means between the groups are presented in Table 8. Regarding subject's ages, no difference was observed between the means presented for individuals with less than 60 years (143.38±18.67), when compared to those with the same age or superior to 60 years (154.5±7.14). Even considering that age is a delimiting element for the man the interviewees are in the adult and elderly phase what justifies means so close. The fact that everyone is over 30 years shows according to Antonovsky its complete establishment. It was observed that even those over 60 years presented an active professional life what doesn't put them at the margins of society, influencing their SOC.

Table 8 Means of the Total SOC Values according to the Different Groups

Variable	N	Mean±SD
Age		
< 60	8	143.38±18.67
≥ 60	4	154.5±7.14
Sex		
M	4	135.5±20.74
F	8	152.88±10.87
Disease state		
Healed	4	139.25±25.13
Follow-up	4	146±8.76
Treatment	4	156±8.76

Figure 1 shows the distribution of measurements for these two groups. For sex of the participants was observed a tendency of higher mean SOC scores in women (152.88±10.87) demonstrating that they felt significantly less stressed with the disease, when compared to the men (135.5±20.74) with a value of P = 0.08 (Figure 2). According to Antonovsky the individual's sex, as well as, age, degree of education and transculturality "is not indifferent to the constitution of the SOC" (Antonovsky, 1986, p. 91). According to Nunes (1999) several studies in this sense showed that when it comes to men and women the latter are safer when faced with stressors, presenting coping resources.

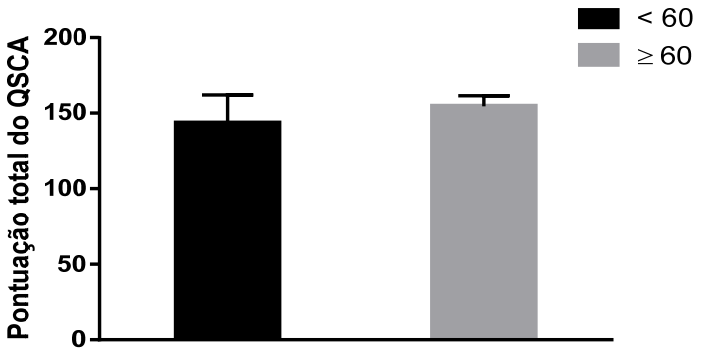

Figure 1 Measurement of the Total Coherence Sense Obtained by the SOC in relation to the Age of the Participants

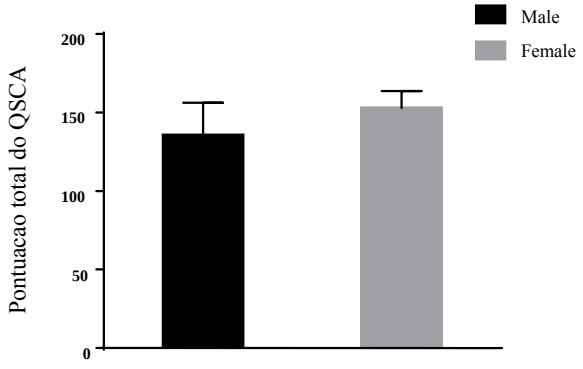

Figure 2 Measurement of the Total Coherence Sense Obtained by the SOC in Relation to the Sex of the Participants

Although higher mean values were observed for the subjects undergoing treatment of the disease no significant differences were observed related to the disease state in the participants (Figure 3).

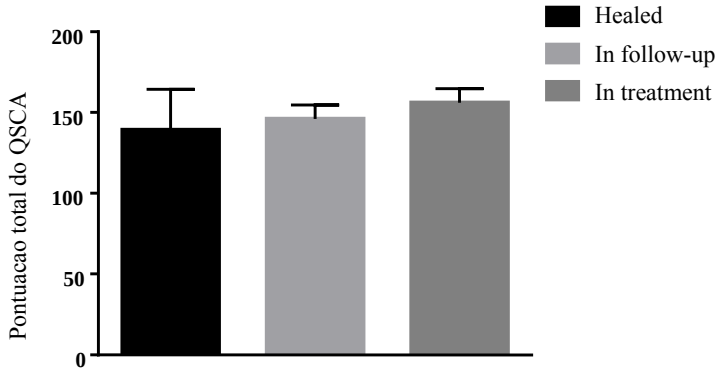

Figure 3 Measurement of the Total Sense Obtained by the SOC in relation to the Disease State

4. Conclusions

Antonovsky's main thesis turns to the fact that a strong SOC is a decisive factor in dealing successfully with ubiquitous stressful situations and thus for maintaining health (Antonovsky, 1987). For him the SOC is like "a stable characteristic" that isn't formed just by individual factors but also by historical, social and cultural conditions (Bengel, Strittmatter & Rebecka, 1999, p. 72).

The Internal Sense of Coherence and the mental health of the individual are closely linked demonstrating that the SOC can influence the perception of a stressful condition by an individual. In the present case, the interviewees showed a coping capacity in some cases, since when they presented high SOC they showed that the problem with the disease led them to seek a better comprehension (meaning) of the problem in order to control it and seeing it like a challenge to be faced and not a burden. According to Antonovsky (1987) when something undesirable and unexpected (like this disease) arises, those with a high SOC are sure to be able to cope it. In the present case men showed lower values of SOC than women, demonstrating that they have fewer resources for the confrontation (management capacity). For Antonovsky (1987) this condition turns not only to the abilities of the individual but to the help and influence obtained by other people or institutions.

However, in relation to the state of the disease the individuals demonstrated to remain balanced, that is, motivated to analyze the problem, seeking resources and strategies more suitable to face the disease. We can infer that the interviewees generally saw the diagnosis as a challenge but kept their vision positive to the future, believing that it was possible to face the disease through some form of control.

To this end the support (care) of the family (emotional component), institutions, as well as other people who may have contact become a fundamental point for facing the illness. With this study we could verify that the oncological disease, as a limiting situation, generates stress in the life of the patients; that some people grow, evolve, learn with the suffering that the oncological disease brought to them and that is susceptible to identification by the way these people face it, regardless of the cure. It is therefore a process of learning and education of the patients themselves, at the same time that it has implications in the caring process and thus is also relevant for the learning of the training caregivers. In fact, we can anticipate that if we indentify the conditions that contribute to these people to learn in the disease we can try to create similar conditions in other patients so as to provide them with a similar process.

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