ROME, ITALY
19-21 NOVEMBER
2019

2019 WEI INTERNATIONAL ACADEMIC CONFERENCE PROCEEDINGS

EDUCATION & HUMANITIES

BY THE WEI

ISSN 2167-3179 (ONLINE) USA

TABLE OF CONTENT

EDUCATION DEVELOPMENT VIA DISCUSSION PANELS UTILIZING LATEST PHOTONIC RESEARCH PAPERS AND EXPERIMENTAL PROJECTS FOR FINAL YEAR UNDERGRADUATE ELECTRONICS ENGINEERING STUDENTS

AHMED ABD EL AZIZ and MARIAM GALAL

Photonic Research Laboratory (PRL),
Arab Academy for Science, Technology and Maritime Transport (AAST&MT),
College of Engineering and Technology,
Alexandria, Egypt

ahmedabdelazizyoussef@gmail.com
mariam.galal@gmail.com

ABSTRACT

This paper introduces advanced undergraduate electronics engineering students to the newest research papers in the photonics and optoelectronics field. An elective course named 'Photonic Devices' offered to final year students in Electronics and Communication department, Faculty of Engineering, Arab Academy for Science and Technology (AAST), Egypt, focuses on the fundamental devices used in the optical field. The course objective is to equip students with knowledge on the necessary and most significant photonic devices. The course studies the different types of optical sources, photodetectors and other up-to-date photonic devices that can perform most of the functions required for all-optical networks and photonic signal processing. Students should be familiar with material types, semiconductors, diodes and transistors that some of the photonic devices are dependent on. In lectures, we define what a paper is and identify their different types. We explain the difference between conferences and journals, the reviewing process and their requirements. Lectures include how to read and write technical research papers. Such lectures are to familiarize students with the construction of a paper, how is it organized how to identify the problem statement and the different approaches and corresponding results used to solve/enhance such problem. In tutorials, few most recent research problems (already picked by lecturers) are distributed among students. Two different student groups are to debate a single research problem solved by different research papers in a discussion panel. Students are also required to execute an experimental project that uses some of the main photonic devices studied in the course.

Keywords: Laser, Optical Communications, Panel Discussion, Photonic Devices, Research Papers.

Introduction

Optical is a rapidly growing field that has a lot of potential in communications due to the growing demand for bandwidth and connectivity. In the new communications era of 5G and internet of things (IoT), the demand for fast, reliable and green communications has risen to unprecedented levels[1]. To be able to meet such demands, electronics and communications engineers are required to first understand and be equipped to harvest the full potential of photonic devices. Such engineers should be able to compete in the groundbreaking development and rapid innovation within the optical communications field. Unfortunately, compared to other fields of communications, most educational entities and engineering programs in Egypt offer less focus on optical communications or optical devices. For that reason, the "Photonic Devices" course was established to fill such gap in the electronics and communications engineering education and to enable students to compete in that rapidly changing and promising field.

The 'Photonic Devices' is taught as an elective course in the Electronics and Communications Engineering program at the Arab Academy for Science, Technology and Maritime Transport (AASTMT). The course was established within the department under the name 'Optoelectronics' but was discontinued for almost 12 years. It got reinitiated in the fall semester of 2012, and its curriculum is continuously updated to match the current state in research. Students in the final year of their degree (i.e. 9^{th} and 10^{th} semester) are advised to take the course as one of their five elective courses if they are interested in the field. The course lasts for 16 weeks, each week contains a 2-hour lecture and a 2-hour tutorial session. For the successful completion of the course, students are required to have an overall score of at least 60 marks out of 100 available. Those marks are collected throughout the course period in the form of regular exams, presentations (flipped classroom), practical projects, oral marks and a final exam.

The course covers the optical sources for light transmission, optical detectors for detection and the key photonic devices that perform the significant functions within an all-optical network. The main topics covered in the course curriculum are:

- The spectrum of light
- All optical networks (AON)
- Light production
- Different processes within materials
- Laser theory of operation
- LED theory of operation
- Linewidth of light sources and data rates
- Characteristics of photodetectors and light reception
- Photoconductors, photodiodes and phototransistors: theory of operation
- Optical amplifiers: RAMAN, EDFA and Semiconductor optical amplifier (SOA)
- Fiber Bragg grating: fabrication, types, operation and applications

Class participation is vital in the learning process of any course, but is more significant in engineering courses. Unfortunately, undergraduate courses offered in the field of engineering are widely dominated by the lecturer with limited to no participation from the students' part (at least during the lectures). This allows minimal opportunity for the students to speak up and to originate ideas, which is what engineering is all about[2]. Discussions as a pedagogical tool can be one of the partial solutions for increasing student participation in an undergraduate course. Not only do they teach the students to gather the courage to express and display their ideas, they are also a key indicator for the level of understanding to the lecturer. As a result of a class discussion, the lecturer gets an insight of the modifications required in the teaching methodology and curriculum in order for students to achieve the optimum outcomes[3]. While discussions in general are not ideal for delivering lot of information or to cover large parts of the curriculum to students, they are perfect in encouraging students' participation and boosting even the shiest of students to speak up. Preparing for such discussions also help the students to read and understand extra materials and are known to increase the probability of submitted assignments and research papers[2].

There are several types of discussions that can be performed in a classroom as part of the didactics of a course, the most important of which are panel discussions, debate discussions and role-playing discussions. In a panel discussion, only a few of the students act as the panel while the remaining students act as audience with limited participation. A certain question is discussed among the panel members while a panel leader acts as a facilitator or a moderator for the discussion. This panel leader the main job is summarizing the main points and keeping the flow of the discussion. At the end of the panel discussion, the leader opens the discussion shortly for the audience

participation[2,3]. A debate discussion on the other hand incorporates the entire class, which is divided in two groups, usually a pro- and a con group. A debate discussion is normally utilized for the introduction of controversial issues with the aim of teaching the students to form reasonable arguments and to critically discuss a certain topic. Each group is given a certain limited amount of time and allowed to present his arguments in a concise yet reasonable and convincing manner[4,5]. Finally, role playing gives the students clearer insights into the position of a certain author by understanding and characterizing their points of view and acting on them as if they were their own[6].

Practical lab experiments and hands-on projects are essential for the participation of the students and vital in the understanding of applied engineering concepts[7]. Unfortunately, due to the extremely expensive photonic devices and equipments, related laboratory experiments are not always available and very limited[8]. However, for the sake of introducing the students to the optical communications concepts, simple hands on projects with programmable chips and off-the-shelf electronic components (such as optical transmitters and receivers) can enhance the understanding of the students and let them face the challenges in transmitting data.

To maximize the student participation in the 'Photonic Devices' course, the lecturers have incorporated both discussions and practical hands-on projects in the course, besides the traditional passive lecture format. Together with the flipped classroom method, these approaches would help for delivering new concepts and maximizing the students' presentation, research and communication skills. This paper highlights the most important pedagogic and didactic concepts used in teaching the 'Photonic Devices' course, how each method has been implemented, and the outcome and feedback received upon utilizing them.

Didactics And Teaching Methods

Five different teaching methods are utilized in this course. Lectures offer the theoretical knowledge in traditional ways. While lectures require only limited participation from the students' side, they are essential in delivering new concepts and state of the art technologies in the photonic devices field. They cover the key devices required in optical communication systems, their similarities and differences, advantages and challenges, types, functions and applications, and their operational principles. Students are encouraged to ask questions and criticize ideas during the lectures part of the course.

Students are prompted to work in small groups or pairs (depending on the number of students registered for the course) on a set of real-life engineering problems in the field of photonic devices, come up with the most appropriate mathematical solution and present their results to their peers. This teaching method aims to improve their teamwork skills, expose them to real-life engineering challenges and enhance their problem-solving ability.

The flipped classroom setting is the third teaching method employed in this course. The students are asked to cover some advanced or broader course related topics in the form of self-prepared 10-minute presentations followed by another 10 minutes for discussions and questions from their colleagues and tutor/lecturer. The presentations can be prepared and delivered either individually or in pairs. In the case of pairs, the presentation duration and the following questions-and-answers session are doubled in order to cover the pre-agreed broader topic in more details. Some of the topics covered in presentations by the students include:

- Wavelength division multiplexing and multiplexers
- Optical logic gates
- The human eye as perfect photodetector
- Applications of optical devices in the biomedical field
- Microscopy
- Optical storage (2D and 3D)
- All optical computing and all optical networks
- Visible light communication
- Free Space Optical Communications (FSO)
- Underwater optical communications

The fourth and fifth teaching methods are panel discussions and experimental hands on projects respectively, which are the highlight of this paper and are therefore discussed separately below.

Panel, Debate And Role-Playing Discussions

Undergraduate research has been proven to have a major effect on the overall education of engineering students. Undergraduate students who participate in research activities during their studies have shown not only better communication skills, but also higher graduation rates and GPAs. It also challenges the students and gives them the opportunity to work on up-to-date and open-ended research problems[9]. Unfortunately, undergraduate research is rare in the field of engineering in general, especially in universities that don't grant PhD degrees[9]. This results in a lack of preparation when the students reach the postgraduate level of studies in the field of photonics and optics as well as an outdated knowledge level in the field. For that reason, it has become recently one of the main aims of 'Photonic Devices' course to expose students to recent research papers and teach them how to read and critically analyze published research.

During lectures and tutorials, students are introduced to the publication process of scientific research. They learn the idea behind peer-reviewing and the difference between publication in conferences and journals. They study how scientific papers are structured to convey the clearest and most concise aspects of the research point. Recent published papers in the field of photonic devices and optical communication systems have been introduced and discussed in class as examples for well and badly written scientific papers. The ethical aspect and integrity as well as originality of the scientific research have been highlighted during those "Introduction to research papers" sessions. The students were also encouraged to take advantage of the university's library resources to access the most up-to-date research papers in their field of study. They study how to critically analyze and criticize the published results and question their repeatability and authenticity. The main aim behind this practice is to expose the students to the first steps of undergraduate research, i.e. how to read and analyze a scientific paper and do a literature review based on their findings.

To ensure that the students have fully grasped the concepts of scientific papers and to increase their participation, class discussions in the form of role-playing, panel discussion and debate are introduced in this course. Students are then divided into equal-sized groups. Each two groups are given two published papers with the same problem statement or hypothesis but solved or tackled using different methodologies/techniques. The main concepts of the distributed research papers are discussed earlier during the lectures and tutorial sessions before the panel discussion. This provides the students with the necessary basic background information for understanding their assigned papers.

The team/group members are asked to read, fully understand and critically analyze their assigned paper with the aim of identifying its strengths and weaknesses. They are also required to do the same for the other paper concerned with the same topic. They should be giving particular attention to the similarities and differences between both papers in terms of methodology and achieved results. A summary for the main points should then be written to guide and help them during the discussion. During the preparation time, the students are encouraged to check the references of their assigned papers. Throughout the preparation phase, the students can consult the lecturers about their assigned papers for any clarifications regarding any unknown concepts or missing background information, provided that they have done enough effort to research their questions beforehand. They are also encouraged to contact the papers' authors regarding any missing information or further clarification.

The panel discussion between each two opposing groups lasts for about 20 minutes. The debating students are seated in a V-shaped seating arrangement facing the rest of the audience (i.e. the remaining course members), with each team on one side of the V-shape, as shown in the picture displayed in Figure 1. V-shaped seating arrangement of panel members, picture taken from the performed panel discussion in Fall 2018.. At the beginning of the discussion, each team is given 3 minutes to briefly and objectively summarize their paper and results. This gives the audience a quick idea about the main topic of the paper and helps the debating students learn how to summarize and present their work in a concise and scientifically accurate manner. Afterwards, each group defends their paper by stressing on its strengths and justifying its weaknesses compared to their opponents' paper, playing thereby the role of the actual authors of the paper. Each team should politely criticize/attack the methodology or results of the opponent's paper, stressing on its weaknesses in a debate-style discussion. Examples of the weaknesses that students can focus on are the lack of parameters investigated or the lack of inconsistency, verification or clarity of the paper's results.

The exercise/session resembles a panel discussion because only few members of the class are presenting on stage while the rest are audience. However, a flat hierarchy is kept for this exercise and the discussion is not steered by a panel moderator. Instead, in case the discussion comes to a halt or stops due to lack of discussion points, the tutor reinitiates the conversation and keeps the flow of discussion by pointing out another difference between both papers.

On the other hand, the discussion also resembles a debate due to the fact that each group opposes and criticizes one the other team's paper.

Obviously, this exercise requires a very careful and long preparation beforehand from the lecturer/instructor side. The effort required by the lecturer/instructor is not only to choose clear, recent and appropriate papers for the students in the field, but also to study the similarities and differences between them in minute details. Questions should therefore be prepared beforehand to help the flow of the discussion.

The learning outcomes from such exercise are to:

1. Teach students to fully understand and critically analyze a scientific paper
2. Help students to improve their negotiation, debating and presentation skills
3. Improve the students' team work ability

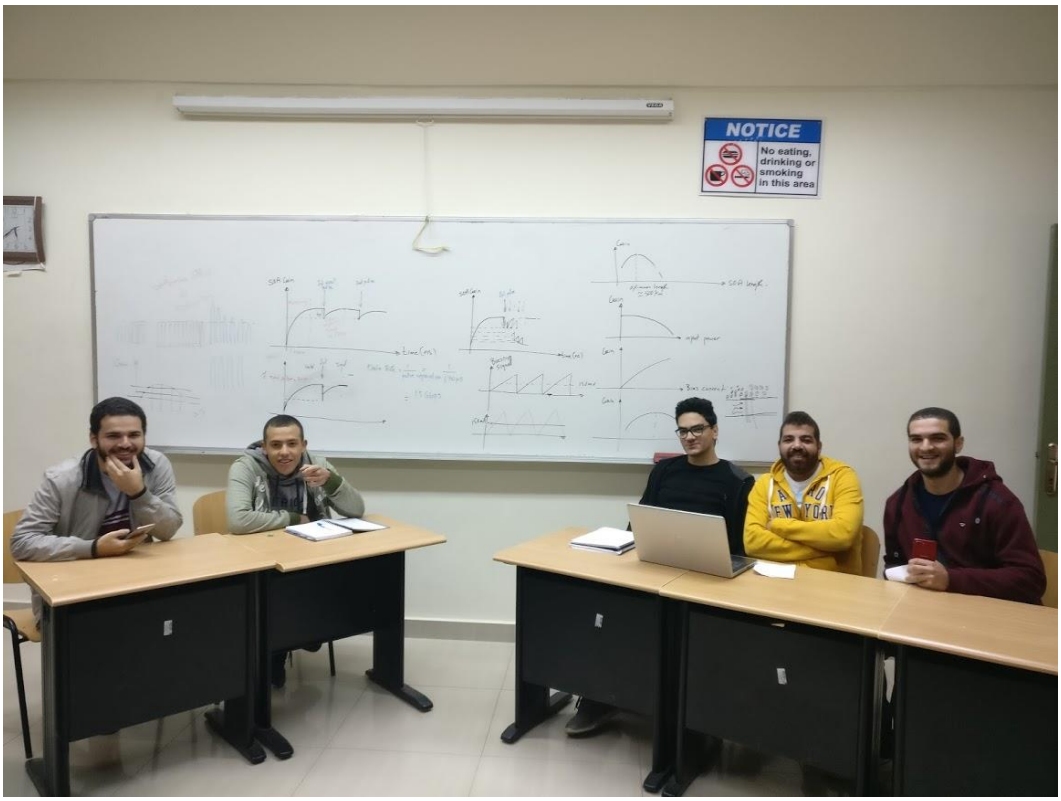


Figure 1. V-shaped seating arrangement of panel members, picture taken from the performed panel discussion in Fall 2018.

Experimental Project

At the last couple of weeks of the semester, the students are asked to practically implement a fully functioning optical system in the form of a car laser-tag game. Each student modifies a remote-controlled toy car to host a laser diode, a photodetector, a programmable microcontroller (Arduino) board, a 7-segment display, a green and a red indicator LEDs on its deck.

Each car should be able to "shoot" a continuous wave (CW) beam using the laser diode to hit its opponents' photodetector. At the start of the game, a counter is set to zero and displayed on the 7-segment, the green LED is switched on indicating that the car is intact (i.e. not defeated yet) and the laser diode is turned on to hit its opponent. Two students play the game as opponents and their main role is to steer their respective remote-controlled cars in order to aim their laser diode beam towards their opponent's car photodetector. When the photodetector of a car is hit, the counter is increased by one and the new score is displayed on the 7-segment module. As long as the number on the counter is less than three, the game goes on. Once a car is hit three times, the shooting laser diode and the

green indicator LED are turned off, while the red LED mounted on the car's deck is turned on, announcing that the hit car is defeated and the game is over. The design and rules of the game are presented on the flowchart in Figure 2.

The project offers the students the ability to build a fully functioning optical transmission system using simple off-the-shelf components. The students face few challenges of a typical visible light communication system through this experimental project. The alignment is one of the main challenges that students would face due to the requirement of line-of-sight (LOS) between the laser source and the photodetector. While designing the transmitter and receiver, students are also required to overcome the ambient light noise sources along the channel. The fact that they are allowed to play and compete in the game that they have designed themselves gives a fun edge to the project. It also increases their motivation and enthusiasm to overcome the challenges they might face in the system design and implementation phases. The flow chart below explains the rules of the game and accordingly, the minimum car design requirements to be able to compete.

In the assessment of this project, a full mark is achieved by any student who satisfies the basic requirements for a laser tag and submits a fully functioning toy car. Additional bonus marks could be achieved by those students who go the extra mile and show creativity in their car design. Few of the creative designs presented by students include showing the results on an LCD screen, designing cars from scratch instead of using a remote-controlled toy car or creating a self-driving smart car that does not require a remote control.

Although it is not directly related to teaching the course, it is worth mentioning that during this practical competition, one of the participant students is chosen as a game moderator. For quality assurance, the role of this moderator is to test the cars and ensure that certain requirements are met before the competition begins. The moderator should confirm that the counters are zeroed and counting up correctly, the transceivers are mounted on top of the cars at a very specific height for the LOS between opponents. He/she should make sure that both remote controls of the opposing cars are operating at different frequencies so that radio frequency (RF) signals do not interfere. The moderator acts as a judge/referee during the game, holding the time and making sure players are following the rules and that no party is cheating. The role of game moderator is usually assigned to a student who is interested in project management and quality assurance. It is a great opportunity for this student to try the field of engineering project management in a hands-on way.

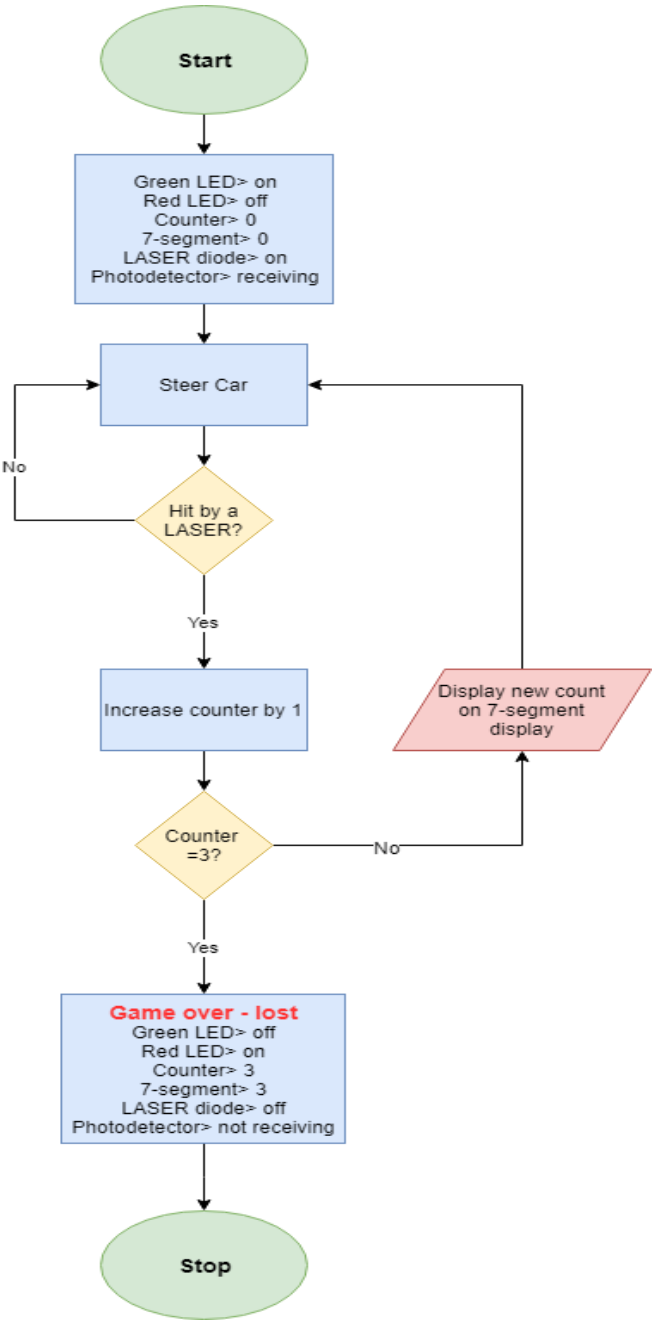


Figure 2. Flowchart of the car laser tag game

Outcome And Feedback

Since the 'Photonic Devices' course has been reestablished in the Electronics and Communications department, all but 4 students have successfully passed the course. Many of those students have chosen optical communications and photonic devices or a related discipline as the focus for their graduation project. Every semester, at least one or two final year graduation projects are in the optical field consisting of students from the 'Photonic Devices' course. After graduation, few of this course's students have successfully started promising careers in the optical field while some others have continued their postgraduate studies in the same field. Postgraduate students as well as graduates who

have passed the course have repeatedly reported that the course material and teaching methodologies have been very beneficial for their studies and careers.

Conclusion

The "Photonic Devices" is taught as an elective course within the Electronics and Communications engineering program at the Arab Academy for Science, Technology and Maritime Transport. The course aims to introduce and study the key photonic devices used in all-optical networks. To maximize the students' participation in this course, the lecturers employed a variety of pedagogic and didactic methods. Besides the traditional passive lectures and problem-solving tutorials, students are given the opportunity to research a topic of their interest in the photonic devices and optical communications field and present it in their own words with the help of multimedia presentations in a flipped classroom setting. Moreover, students actively participate in a group discussion (in the form of a panel-discussion and role-playing setting) by presenting and debating scientific research findings that they have prepared from recent published papers. In this process, the students not only learn how to read, understand and critically evaluate and analyze the results published in a conference or scientific journal, but they also overcome their shyness and improve their communication, teamwork and presentation skills. On the other hand, this course's students develop their understanding of optical communication systems and their challenges by designing and implementing their own car laser-tag that they are allowed to drive themselves in a competitive game. This hands-on practical exercise rounds up the students' understanding of the optical transceivers and the free space optical channel and fills in the gap between the theoretical knowledge they have gathered from the course's other activities and experimental implementation. Due to this course's teaching methods and contents, continuous positive feedbacks are given by students in terms of their raised interest in the optical engineering field. This is also apparent from the better results achieved both in this course and in further postgraduate and research-based courses taken later in their academic and professional lives.

References

1. Elgala H. Indoor Optical Wireless Communication : Potential and State-of-the-Art. *IEEE Commun Mag*. 2011;(September):56-62.
2. Maaske RJ. Using the Panel Discussion Method in High School Teaching. *High Sch J*. 1938;21(2):44-72. http://www.jstor.org/stable/40361104.
3. Shore DK. Encouraging Class Participation. https://www.educationworld.com/a_curr/shore/shore056.shtml. Accessed April 25, 2019.
4. Aclan EM, Aziz NHA. Exploring Parliamentary Debate as a Pedagogical Tool to Develop English Communication Skills in EFL/ESL Classrooms. *Int J Appl Linguist English Lit*. 2015;4(2):1-16. doi:10.7575/aiac.ijalel.v.4n.2p.1
5. Darby M. Debate: a teaching-learning strategy for developing competence in communication and critical thinking. Darby M, ed. *J Dent Hyg JDH*. 2007;81(4):78.
6. Zowghi D, Paryani S. Teaching requirements engineering through role playing: lessons learnt. In: *Proceedings. 11th IEEE International Requirements Engineering Conference, 2003.* ; 2003:233-241. doi:10.1109/ICRE.2003.1232754
7. Cobb P, Confrey J, diSessa A, Lehrer R, Schauble L. Design Experiments in Educational Research. *Educ Res*. 2003;32(1):9-13. http://www.jstor.org/stable/3699928.
8. Walkington J, Pemberton P, Eastwell J. Practical work in engineering: A challenge for distance education. *Distance Educ*. 1994;15(1):160-171. doi:10.1080/0158791940150111
9. Bishay PL. Introducing undergraduate research in Numerical Analysis of Engineering Systems course. *Int J Mech Eng Educ*. 2018;46(4):345-361. doi:10.1177/0306419018778043

THE ONLINE GRADUATE STUDENT: LEARNING NEW VOCABULARY ABOUT THE AMERICAN REVOLUTION THROUGH ONLINE LIVE AND ASYNCHRONOUS LESSONS

CLAUDINE PERREAULT
PhD, JD Lecturer, Northeastern University

ABSTRACT

Through online live and asynchronous lessons, online graduate students can improve their English speaking and writing skills. Not only will these skills be enhanced during the semester, they will learn about American history. Through online live visits and online curriculum, graduate students will connect the lives of American Pioneers and Presidents to United States history. Some of the most popular visits for graduate students will include live and/or independent visits to museum and historical sites, including and not limited to the JFK Library Museum, the Old Meeting House, the Boston Athenæum and Massachusetts Historical Society. These online graduate students will create a synthesis by looking to the lessons and virtual visits to create their own Time Capsule for the semester. Most notably, these graduate students, with most of the population from abroad, will improve their vocabulary of the English language, which in turn will make them a more professional speaker and writer. The goal is for each student to not only create a Time Capsule, but to reflect on their assignments by creating a collection of learning about American History first-hand by means of primary research.

Keywords: Online Learning, Asynchronous Lessons, Graduate Student, American Revolution, American Presidents

Bio Data:

Dr. Claudine Perreault is a Lecturer at Northeastern University in the Master of Science in Corporate and Organizational Communication Program. With almost 20 years of teaching experience, she has instructed a variety of courses across the curriculum, and with her passion for online learning, she was at the forefront of higher education's flourishing growth of online degree programs. Her research interests include communications, writing and research instruction, American history and literature. She has published articles in academic journals such as the Humanities and Social Science Review, the International Journal of Arts and Sciences and the Journal of Arts and Humanities. She has also traveled to present her work at various conferences around the globe, including Brussels (Belgium), London (England), Freiburg (Germany), Montreal (Canada) and Paris (France). Additionally, she has presented her research domestically at Northeastern University, Harvard University and the Massachusetts Institute of Technology (MIT). Correspondence can be addressed to c.perreault

DIGITAL STORYTELLING FOR 21ST CENTURY SKILLS

MARINE ABRAHAMYAN, ELEN GRIGORYAN
English Studio" Language Centre, ArmeniaEEC, American University, Armenia

ABSTRACT

Digital storytelling is becoming increasingly popular in education. It is also being successfully adapted in EFL/ESL classrooms to engage learners in meaningful language use. However, beyond its unique abilities to elicit meaningful language it has many other strengths.
The current paper reports a mixed-method research study on the potential of digital storytelling for 21st century skills: empowering students for civic engagement, vocabulary learning and finally motivating them to learn English in EFL/ESL classrooms. The sample of the study consisted of 28 EFL learners of the 10th and 11th grades enrolled in an Armenian private school. They participated in 12-week action research study in an after school English classroom digital storytelling being a primary teaching and learning resource taught through civic related materials which were designed and developed by the researchers.
The instruments of the study included: a Motivation for Learning English questionnaire; a Civic Engagement questionnaire and a Vocabulary test. They were applied to the sample of the study before and after implementing the program. After collecting data from the three instruments a follow-up open-ended questionnaire was conducted.
Findings of the study suggest that there is a statistically significant difference between the mean scores of the current research sample in the pre and post assessment of the three areas: motivation for learning English, civic engagement and vocabulary learning in favor of the post assessment.

Keywords: DST, Vocabulary, Motivation, Civic Engagement.

Introduction

In this era of general globalization, English has become the dominant language in every sphere of communication because of its important role in the process of globalization (Zheng, 2011). Studies conducted in EFL context revealed a number of advantages that technology brings into learning and teaching a foreign language (Lei, 2010; Schmitt, 2008; Rodinadze, et al., 2012). Amid a number of learning tools beheld to enhance learning, digital storytelling occupies a prominent position. It is becoming increasingly popular in education and is also being successfully adopted in EFL/ESL classrooms to engage learners in meaningful language use. Digital storytelling opens new prospects and possibilities for EFL learners to look at language learning with different eyes and express ideas the way they want.

Beyond its unique abilities to elicit meaningful language digital storytelling has many other cited strengths (Norman, 2011).

The aim of this study is to uncover the potential of digital storytelling to enhance 21st century skills in after school English classroom: empowering students for civic engagement, enhancing vocabulary and finally motivating them to learn English in EFL/ESL classrooms in the Armenian context. These 21st century skills are all interrelated and are especially important in Armenia, a developing country, where many teachers still continue to teach through a traditional approach of teaching when creativity, critical thinking, student-centered approach and active discussion is not encouraged thus bringing to lack of motivation (Tovmasyan, et.al. 2008). Moreover, despite the fact that digital storytelling is becoming increasingly popular all over the world, in Armenia it is rather a new educational tool and has not been investigated thoroughly.

Design

This mixed methods action research consists of 2 questionnaires each administered twice to 28 high-school students in a Yerevan private school; a pre/post test and a semi-structured interview. The typology of this study is QUAN+QUAL

Results of the Questionnaire for Motivation of Learning English

As mentioned in Chapter 3, the questionnaire *Motivation for learning English* was administered twice-pre and post with the aim to measure the level of motivation for learning English before and after the treatment.

In order to answer the first research question which is *"To what extent does digital storytelling motivate students to learn English?" both descriptive and inferential statistics was run.*

Paired T-test was run to compare the mean scores of the pre and post questionnaire total scores.

Table 1.

"T" test between in the pre and post assessment of the study sample in Motivation for Learning English

Area	Measurement	N	Mean	S.D	"T" value	Df	Sig
Motivation for learning English	**Pre**	28	65.54	7.105	-6.655	27	.000
	Post	28	73.36	6.897			

The results show there is a statistically significant difference between the mean scores of pre and post in favor of post-assessment.

Table 2.
Results of the questionnaire for motivation for learning English

Results	**Total scores**	**Highest score**	**Lowest score**	**M**	***SD***
Pre	88	79	54	65.54	7.105
Post	88	84	54	73.36	6.897

As shown in *Table 2*, there was a difference in the highest and lowest scores, and the means on the pre and post questionnaires after digital storytelling was adapted. Thus, it can be concluded that digital storytelling had positive effects on the improvement of students' motivation for learning English. These results may be better understood from the figure below.

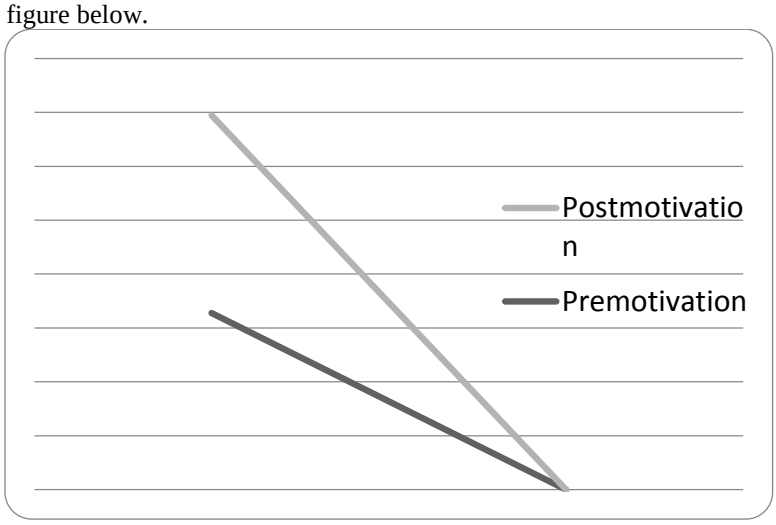


Figure 1. The difference between the pre and post assessment of the questionnaire for motivation for Learning English

To better understand which items triggered motivation for learning English in the post-assessment the researcher decided to present the difference between intrinsic motivation and extrinsic motivation items.

Table 3.

Results of *"t" test between the pre and post assessment of the study sample for Extrinsic motivation*

Items	Measurement	N	"T" value	Df	Sig
Learning English will be useful for my future job	**Pre**	28	-1.544	27	.134
	Post	28			
I study English as I want to do well in my examination	**Pre**	28	-.254	27	.802
	Post	28			

As displayed in the table above there is no significant difference between the pre and post assessment of the extrinsic motivation items.

Table 4.

Results of "t" test between the pre and post assessment of the study sample for Intrinsic motivation

Unlike the results shown in the *table 3*, the results of the *table 4* show that there is strong significance between the pre and post assessment for the intrinsic motivation. This means that the students had less intrinsic motivation for learning English but after the treatment their intrinsic motivation increased.

Thus, it can be concluded that the participants, before the treatment, appreciated the importance of the English language for career advancement but had less intrinsic motivation towards the language itself. After the treatment, when teaching English through digital storytelling, both extrinsic and intrinsic motivation improved, the latter displaying substantial improvement.

Items	Measurement	N	S.D	Mean	"T" value	Sig
I learn English because I like the language very much	**Pre**	28	.875	2.89	-4.448	.000
	Post	28	.573	3.43		
I enjoy learning English very much	**Pre**	28	.651	2.86	-4.688	.000
	Post	28	.576	3.46		
I find learning English very interesting	**Pre**	28	.663	2.93	-4.448	.000
	Post	28	.576	3.46		

The overwhelming majority of the students either agreed or strongly agreed that they needed to learn English to do well in an examination or later to get a job. This means that they had extrinsic motivation to learn English prior to the treatment as well.
To ensure that it was digital storytelling that had impact on the improvement of motivation for learning English, a follow-up interview was conducted.
Data from interviews with the participants helps to triangulate the quantitative findings with the perspectives of participants. These examples illustrate participants perceptions about motivation for learning English through digital storytelling.
The participants stated that they had fun and more motivated when learning English through digital storytelling:
The questionnaire for *Civic Engagement English* was administered twice-pre and post with the aim to compare different concepts, areas of interest, and knowledge in the field of civic education before and after the treatment.
Both descriptive and inferential statistics were run. Paired T-test was run to compare the mean scores of the pre and post questionnaire total scores.

Table 5. *"t" test between the pre and post assessment of the study sample in Civic Engagement*

Area	Measurement	N	Mean	S.D	"T" value	Df	Sig
Civic Engagement	**Pre**	**28**	73.64	7.465	-22.890	27	.000
	Post	**28**	93.25	6.228			

The results show there is a statistically significant difference between the mean scores of pre and post in favor of post-assessment.
The results of the interview highlighted the positive impact of Digital Storytelling on students' Civic engagement.
In terms of vocabulary pre-test and post-tests results showed signficant imrovement.

Discussion And Conclusion
The current research study was designed to investigate the impact of digital storytelling for 21st century skills: motivation for learning English, civic engagement and critical thinking skills. 28 EFL learners of 10th and 11th grades enrolled in an Armenian private school participated in 12-week action research study through digital storytelling in an after school English classroom. In order to seize the impact of digital storytelling on the given areas, a mixed research method was administered in observing students changes before and after the treatment.
The findings of the study can be summarized answering the original research questions.

- *To what extent does digital storytelling motivate students to learn English?*- The results of paired T-test run to compare the mean scores of the pre and post questionnaire total scores show that there is a statistically significant difference between the mean scores of pre and post in favor of post-assessment. Thus, it can be wrapped up that digital storytelling had positive effects on the improvement of students' motivation for learning English. Future investigation of the questionnaire items showed that the participants, before the treatment, appreciated the importance of the English language for career advancement but had less intrinsic motivation towards the language itself. After the treatment, when teaching English through digital storytelling, both extrinsic and intrinsic motivation improved the latter displaying substantial improvement.
- *To what extent does digital storytelling empower EFL students for civic engagement?*- The results of paired T-test run to compare the mean scores of the pre and post questionnaire total scores show there is a statistically significant difference between the mean scores of pre and post in favor of post-assessment. Thus, it can be concluded that digital storytelling had positive effects on students' readiness for civic engagement.
- *To what extent does digital storytelling develop EFL students' Vocabulary?*- The results of paired T-test run to compare the mean scores of the pre and post tests for vocabulary show there is a

statistically significant difference between the mean scores of pre and post in favor of post-assessment. Thus, it can be concluded that digital storytelling had positive effects on students'vocabulary learning.

Conclusion

In the light of diverse studies on digital storytelling the researcher of the study has clear picture of the effectiveness and limitations of using digital storytelling in an EFL classroom. Thus, a number of research done in the field come to prove that digital storytelling has the power to develop learners' language skills along with developing 21st century skills. Studies indicate that learners' active participation in the process of digital story creation provides students with opportunities to develop 21st century skills. Moreover, digital storytelling may provide learners with authentic civic situations applicable in their own lives thus motivating them to learn. Finally, according to literature, well-organized digital stories based on civic engagement topics may develop vocabulary learning and promise increased motivation of learning. In reference to language teaching, teachers should be well familiar with the platform and be ready to guide students use storytelling tools to have successful teaching experience. Taking the findings into account the following research will be conducted in Armenian context to investigate the impact of digital storytelling on 21st century skills in a Yerevan private school. As rare research has been done in Armenia in this context, this research will have its contribution to the existing studies.

References

Lei, J. (2010). Conditions for Ubiquitous Computing: What Can Be Learned from a Longitudinal Study. Computers in the Schools, 27(1), 35-53.

Normann, A. (2011). Digital storytelling in Second Language Learning. Norwegian University of Science and Technology, Trondheim

Rodinadze, S., & Zarbazoia, K. (2012). The Advantages of Information Technology inTeaching English Language. Frontiers of Language and Teaching, Vol. 3, 271-275.

Schmitt N. (2008). Vocabulary in Language Teaching._Cambridge: Cambridge University Press.

Zheng J, Yang J, Zhang H, Wang L, Sun Z, Xue H (2011).Application of Digital Storytelling in Comprehensive Practice Activity Curriculums. *CCIS*, *243*. 406–414.

DEVELOP COMMUNICATION, SOCIAL AND INTERCULTURAL COMPETENCE THROUGH FILM APPRECIATION

IBOLYA TOMORY
Óbuda University Ágoston Trefort Centre for Engineering Education (HUNGARY)

ABSTRACT

Developing the soft skills of students studying in the technical field is at least as important today as acquiring professional knowledge. Films about cultures and conflicts are good opportunities for this, but university use is not common in this field.

The study presents the possibility of using films for the development of soft skills of students studying in the technical field, primarily in engineering and engineer teacher training. The content and processing of films help to develop intercultural competence and its important component, social skills.

Structure of the educational process: viewing and analyzing a film based on different aspects, using discussion and other methods. It supports student-student and teacher-student communication, mutual understanding, opinion-making, analysis, critical and expressive skills.

Keywords: Social, Intercultural Competence, Film Appreciation, Skills Development.

Methodology

From 2017/18 and 2018/19 during the school year and in 2019/20 I. semester I conducted an observation and survey in 5 groups. A group of 14, 17, one 18, one 13 and 17 person full-time engineers, consisting of students from mechatronics, electrical, mechanical, light industry, economics and IT. After watching the movies, we were discussing what they saw, and they were given various tasks on several occasions, and finally they filled out an anonymous satisfaction questionnaire. For the analysis of the data, I used the observations of the lessons, what students was said there, the behavior of the students, and the questionnaire was a complement to it.

Results

The subject was found to be so interesting and instructive that it was recommended to their peers and the newer groups were mostly the result of this. The films gave them a broader perspective, new look, historical and cultural knowledge. Most of them have expressed their self-knowledge, and experience has shed light on how much they can see. For example, they could collaborate more easily with their peers, starting to think differently about differences and conflicts. Many have indicated that their communication skills have also improved.

Conclusion

The film is an attractive form of education for today's young people, and its effectiveness can be greater than traditional forms of learning. The role of films can be important in the development of skills highlighted in the labor market today. It would be useful to use movies to acquire other professional knowledge.

DISCUSSION ON THE APPLICATION OF AUGMENTED REALITY TECHNOLOGY IN RELIEF TEACHING

WEILONG WU, YEN HSU, JIANGJIE CHEN
The Graduate Institute of Design Science, Tatung University
No.40, Sec. 3, Zhongshan N. Rd.
Taipei City, Taiwan
D10717016@ms.ttu.edu.tw

ABSTRACT

Nowadays, Augmented Reality (AR) technology is increasingly studied in various fields, but there are few examples of using AR technology in art education. Therefore, it is necessary to explore the influence of AR technology on college students' art education. In this study, AR technology is applied to the teaching of relief course. Students learn the making skills of relief clay sculpture through experimental design. Participants were 39 first-year students. They were divided into two groups, with a control group using a traditional picture learning sheet. However, the experimental group used picture learning sheet and AR technology to learn clay sculpture respectively. At the end of the course, a questionnaire survey was conducted on students' learning, aesthetics and sculpture, and the questionnaire data from three aspects were collected for analysis. The results show that :(1) in terms of learning and aesthetics, there is no significant difference between the control group and the experimental group in different teaching methods, but the results show that using AR technology is helpful to improve students' learning ability in relief courses. (2) the students in the experimental group showed significant differences in their understanding ability of sculpture making, and strengthened their ability to deal with the hierarchy and structure of sculpture aspects. The results of this research can provide reference for developers of art education and augmented reality technology.

Keywords: Teaching Method, Augmented Reality Technology, Relief Course.

LEARNING BYZANTINE MUSIC IN A SENSORY-MOTOR BASED ENVIRONMENT

KOSTAS KOKKINIDIS, THEODOROS MASTORAS, KYRIAKI BALTA, ATHANASIA STERGIAKI, PARASKEVI KRITOPOULOU, GEORGE PATRONAS, IOANNA SIMELI, ISAVELLA KOTINI, AIKATERINI YANNOUKAKOU, MENELAOS KATSANTONIS, PANAGIOTIS FOULIRAS, IOANNIS MAVRIDIS

University of Macedonia
Thessaloniki, Greece

kostas.kokkinidis@uom.edu.gr
mastoras@uom.edu.gr
balta@uom.edu.gr
astergiaki@uom.edu.gr
pkritopoulou@uom.edu.gr
gpatronas@uom.edu.gr
ioanna.simeli@uom.edu.gr
ikotin@uom.gr
kgian@uom.edu.gr
mkatsantonis@uom.edu.gr
pfoul@uom.edu.gr
mavridis@uom.edu.gr

ABSTRACT

One of the main expressions of cultural identity is music; therefore, it is a widely popular attribute. Yet, although common and widespread, it is not an attribute simple to attain. The ability to perform music requires the development and synchronization of gestural skills with musicality. The presented research describes the development of a learning environment, based on sensory-motor learning principles, aiming to propose a contemporary learning method of vocal music. The learning method used, combines music reproduction with gestural movement. The student reproduces the music notation while executing a variety of gestures. Each gesture corresponds to a specific music track. The vocal sounds and gestures performed by the student are compared with a pre-recorded sample generated by the teacher in order to extract feedback. Such feedback is provided in the form of an optical signal which signifies the deviation of the student's sounds and gestures from those of the pre-recorded teacher's performance. The learning method used for the development of the sensory-motor based environment was particularly designed and implemented for the Byzantine music gender whose complexity and variety offered new challenges in testing the existing gesture and sound recognition algorithms. The captured hymns were recorded in four Byzantine modes, which were «1st authentic», «1st plagal», «4th authentic» and «4th plagal» along with their corresponding gestures.

Keywords: Sensory-Motor Learning; Byzantine Music; Multimodal Interaction; Gesture Recognition; Singing Voice Assessment.

Introduction

Byzantine music is a vocal music genre not accompanied by musical instruments. It is considered the evolution of ancient Greek music, and is named after the area of the city of Byzantium. It is consisted among others, of chants and hymns. It has special music notation and special tonal qualities. In more detail, some key differences with the contemporary music are, the fact that a distance between consecutive notes, the interval, may differ in Byzantine music from contemporary music internals. Therefore, Byzantine Music intervals result to unusual scales, named genre or echo. Each echo does not use absolute frequency values for each note, since what the intervals are the important (ek Madytwn, 1832) (Papadhmhtriou, 2005 A) (Papadhmhtriou, 2005 B).

On this music genre that functions with relative sounds, the creation of a system that imparts the vocal knowledge is challenging. The presented research utilizes a novel teaching method (Patronas, 2018). that uses gestures to assist the learning procedure, thus, the system requirements increase since gesture learning is combined. It was inspired by existing vocal teaching methods that utilize gestures (Kodály et al, 1974). In practice, the performer moves his/her hand while chanting, to enact through his/her limps the tonal high that is also reproduced vocally. Each note that holds the same tonal high with the previous, is also represented with the same gesture position as the previous note. The method aims to impart music knowledge trough motor memory. The self-instruction system developed compares the teacher performance with the student performance off-line, to provide feedback to the latter. It records audio and visual data, and after a preliminary data process that aims on synchronization, it compares the intervals as frequency values of the teacher and student performance in order to provide visual feedback.

Existing Work

The main technology to capture sound is the microphone. When it comes to motion capture, there are several technologies. There are systems based either on marker-based or marker-less technologies. The former is used for modeling musical performances (Rasamimanana & Bevilacqua, 2009). The latter are using sensors such as Kinect cameras (Microsoft Kinect, 2014), for gesture recognition. Moreover, algorithms such as Hidden Markov Models (HMM) (Baum & Eagon, 1967) are used for data recognition.

In more detail, HMM is a machine learning algorithm that calculates possibilities for an outcome according to the existing data. In practice, HMM was applied on folk music (Chai & Vercoe, 2001) to recognize the sound. There have been developed more systems that use HMM in combination with Dynamic Time Warping (DTW) (Fang, 2009) to accomplish sound recognition for vocal music genres such as Byzantine Music (Kokkinidis et al, 2016).

Existing Multimodal Systems

In regards to multimodal systems, their special operation is the ability to receive multiple types of input signal. For example, they aim on recognizing signals such as speech, facial expressions, heartbeat, pressure and others. Systems able to process multimodal signal were developed in an effort to capture various human activities as for instance, emotions (Stathopoulou & Tsihrintzis, 2011). On a more technical field such as craftsmanship, another system aims to record and recognize performances (Ververidis et al, 2016). Likewise, on dancing (Camurri et al, 2016) and music (Chen et al, 2016) performances, researches attempted to collect various executions.

To achieve multimodal signal input a diversity of sensors is required, to detect different signal type. Thus, it is crucial to invest time for complex preparatory tasks in order to attune the different input signals. Synchronization is necessary to utilize the captured activity. There have been collected complex data structures (Monaci, 2007) (Pitsikalis et al, 2015 due to multimodal signal capture.

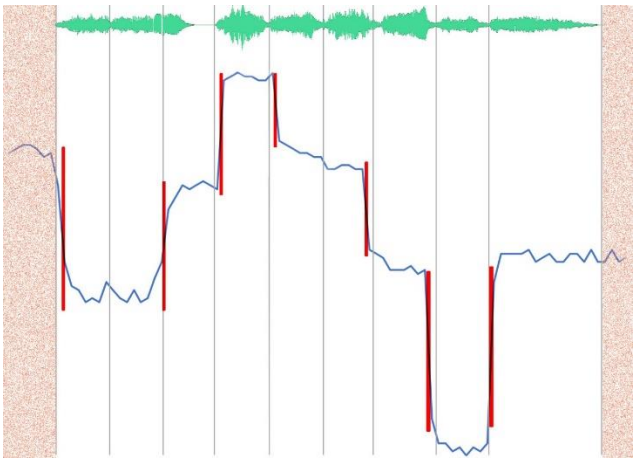
On this system that introduces a novel teaching method, the research concentrates on dual-modal input signal, and more precisely on audiovisual capture.

Teaching Approach and System Methodology

An audiovisual recording of the teacher and the student is necessary to train the system. The system uses HMM to extract the gesture features. The sound features are extracted as intervals, (refer above). These datasets are aligned, analyzed and segmented in order to extract the tempo.

In more detail, the sound segmentation according to tempo takes place through the rhythm held by the gestures. Then the frequencies of the notes defined by the rhythm are compared, together with the tempo of the performance. On Figure 1 is depicted the learning environment.

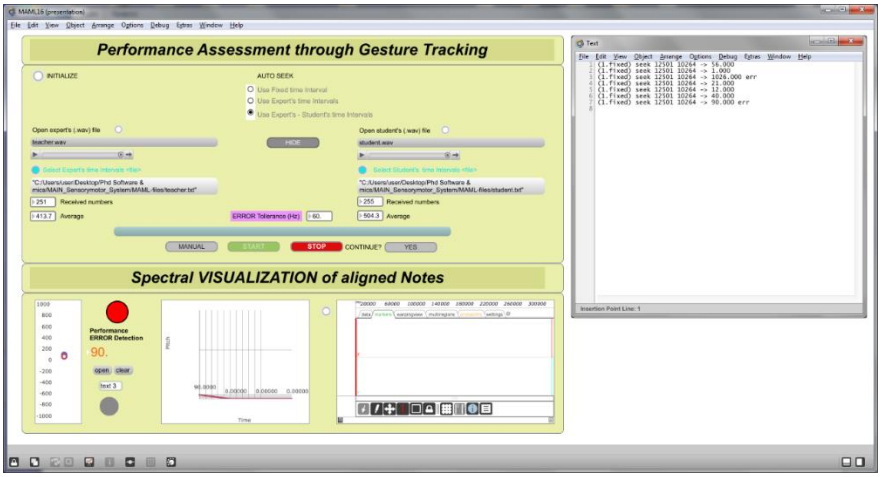
Figure 1: Red areas represent the additional truncation of the recording for hymn boundaries. The vertical lines segment the data according to the note reproduction



Performance Evaluation

Consequently, the evaluation of the performance of the student takes place in terms of tone and rhythm, in accordance to the comparison of the student to teacher performance. The rhythm definition is provided to the software "Performance Assessment through Gesture Tracking" (Figure 2), together with the performances of the teacher and the student. The tool extracts the teacher / student matching rate for each note, taking into account the frequency difference of the two executions.

Figure 2: System environment



The evaluation methodology considers the typical interval frequency on approximately 50Hz. This approach, as well as the method of grading applied by this method, aims to absorb the noise captured during the recording. Therefore, it creates tolerances in the temporal detection of the notes. Moreover, at Byzantine music the performance of a song is graded by taking into consideration the particular tonality of the student.

The fact that Byzantine music is permissible for each performer to sing or chant on a particular, personal scale is this very attribute that allows to our system to be adapt to the vocal range of each performer. And according to this personalized attribute takes place the grading.

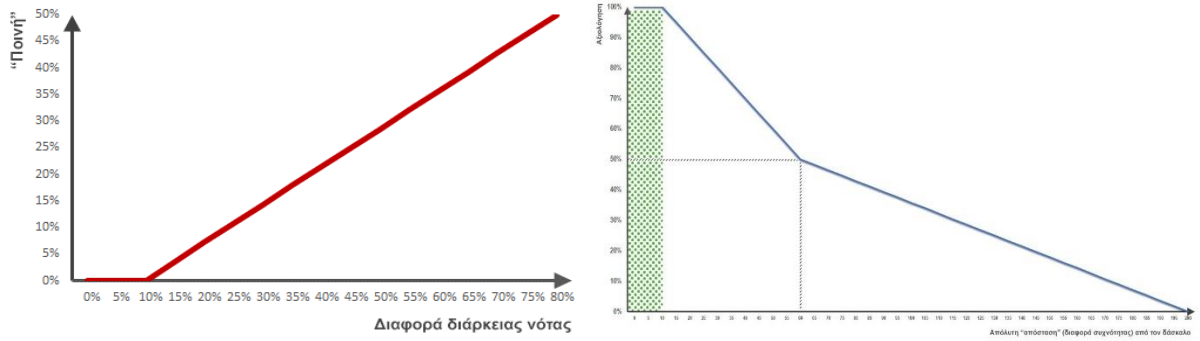
Student Performance Evaluation

On summative assessment, the most popular process of student evaluation, the student performance is converted to a numerical quantity and provided as feedback (Race, 2014). Yet, even if feedback theoretically attempts to modify the thinking and behavioral functioning of the student, it does not urge him/her to correct the performance mistakes (Shute, 2008).

In contrast, our system uses negative assessment. The rhythm and tonal pitch are graded separately in order to estimate the student's grade per note. The purpose of this approach is to render the system effective to be used by both excellent and novice students as a realistic assessment of the learning task. The student is graded with excellent score when the performed intervals diverge from the teacher performance is less than 10Hz. If the divergence is calculated slightly over a note (60Hz) the score is punished with a 50% penalty score. At even larger discrepancies, and more specifically at those of four notes (200Hz) the student score is zero.

Although the described grading method is punishing, in practice it is due to the fact that the music genre is based on intervals that in the end this grading approach results to a positive grading for the student. It has been observed that when the intervals are kept constant and consistent for at least the previous two notes (when available), considering that the student follows a personal scale, the grading is rewarding. Figure 3 depicts the grading of the student, in relation to the interval frequency divergence from the teacher performance.

Figure 3: Grading for pitch and rhythm for each interval divergence

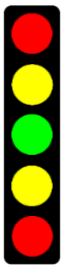


Feedback

When it comes to feedback it has been observed on previous researches that, shortness is a contemporary tendency on communication patterns (Gold et al, 2010) (Hughes et al, 1998). Existing works have introduced an effective communication visualization based on traffic signals (Arnold & Pistilli, 2012), which is also used on the presented research. The primal benefit is the high speed of comprehension of the information, since it is a widely used means of nonverbal communication.

The traffic sign displayed to the student may project five lights of coded color. The color is an indication of the student grading, as described above. In more detail, the green light depicts the excellent performance, graded above 90%. The yellow light depicts a grading between 50% and 89%, while the red light indicates that the grading is zero. Moreover, the position of the yellow and red lights (high or low) indicate whether the interval divergence was positive (high sign) or negative (low sign). On Figure 4, are depicted the possible lights that may be projected to the student, according to his/her performance.

Figure 4: Feedback instruction



Conclusions

This paper presented a learning system based on a teaching method of a special vocal music genre that is based on intervals, the Byzantine music. The learning method combines the sound performance with gestures to impart motor memory intertwined with vocal memory. The system uses HMM to extract sound and gesture features that describe a performance. The extracted data are segmented and analyzed in terms of the distance between consecutive notes, thus, interval-wise. Consequently, they are compared with the corresponding features extracted from the teacher performance. The evaluation of this comparison takes place both pitch and rhythm-wise, in order to provide a detailed information on the student progress. The score feedback is provided through a traffic sign that informs for both the divergence magnitude and direction.

In the future, more recordings of an even greater echo range will test the system grading accuracy and teaching effectiveness. It will provide simultaneously a data base of various Byzantine hymns.

Acknowledgements

This research work was funded by the General Secretariat of Research and Technology of the Greek Ministry of Education, Research and Religious Affairs, for years 2016-2017 (in reward for participation to competitive EU programs) of the project Intangible Treasures - Capturing the Intangible Cultural Heritage and Learning the Rare Know-How of Living Human Treasures-I-TREASURES, 600676/FP7-ICT-2011-9.

References

Arnold, K. E., & Pistilli, M. D. (2012, April). Course signals at Purdue: Using learning analytics to increase student success. In *Proceedings of the 2nd international conference on learning analytics and knowledge* (pp. 267-270). ACM.

Baum, L. E., & Eagon, J. A. (1967). An inequality with applications to statistical estimation for probabilistic functions of Markov processes and to a model for ecology. *Bulletin of the American Mathematical Society*, *73*(3), 360-363.

Camurri, A., Volpe, G., Piana, S., Mancini, M., Niewiadomski, R., Ferrari, N., & Canepa, C. (2016, July). The dancer in the eye: towards a multi-layered computational framework of qualities in movement. In *Proceedings of the 3rd International Symposium on Movement and Computing* (p. 6). ACM.

Chai, W., & Vercoe, B. (2001, June). Folk music classification using hidden Markov models. In *Proceedings of international conference on artificial intelligence* (Vol. 6, No. 6.4). sn.

Chen, L., Gibet, S., Marteau, P. F., Marandola, F., & Wanderley, M. M. (2016, July). Quantitative evaluation of percussive gestures by ranking trainees versus teacher. In *Proceedings of the 3rd International Symposium on Movement and Computing* (p. 13). ACM.

ek Madytwn., H., & Dyrrahioy, Ἀ. (1832). Theorhtikon. Mega tis moysikhs, htoi biblion didaktikon kai polytimon ths Moysikhs Episthmhs kai syggramma peri ths Byzantinhs Ekklhsiastikhs Moysikhs.

Fang, C. (2009). From dynamic time warping (DTW) to hidden markov model (HMM). *University of Cincinnati*, *3*, 19.

Gold, J., Lim, M. S., Hellard, M. E., Hocking, J. S., & Keogh, L. (2010). What's in a message? Delivering sexual health promotion to young people in Australia via text messaging. *BMC public health*, *10*(1), 792.

Hughes, L. D., Done, J., & Young, A. (2011). Not 2 old 2 TXT: there is potential to use email and SMS text message healthcare reminders for rheumatology patients up to 65 years old. *Health informatics journal*, *17*(4), 266-276.

Kodály, Z., Halápy, L., & Macnicol, F. (1974). *The Selected Writings of Zoltán Kodály. (Translated by Lili Halápy and Fred Macnicol.)*. Boosey & Hawkes Music Publishers.

Kokkinidis, K., Stergiaki, A., & Tsagaris, A. (2016, July). Error prooving and sensorimotor feedback for singing voice. In *Proceedings of the 3rd International Symposium on Movement and Computing* (p. 32). ACM.

Microsoft Kinect (2014), Retrieved May 18, 2014, from http://www.microsoft.com/en-us/kinectforwindows/

Monaci, G. (2007). *On the modelling of Multi-modal data using redundant dictionaries* (No. THESIS). EPFL.

Papadhmhtriou, P. D. (2005, July A). Oi klimakes ths Byzantinhs moysikhs kata thn moysiki epitroph toy 1881. Retrieved February 2, 2017, from http://portal.kithara.gr/modules.php?name=News&file=print&sid=729

Papadhmhtriou, P. D. (2005, June B). Analogion. Methodos sygkerasmoy klimakwn – oi diatonikes klimakes toy Didymoy. Retrieved February 2, 2017, from from: http://byzantine-music.gr/Klimakes/diatonikh_sugkrash1881.html

Patronas, G. (2018, November). Proseggish sth nea didaktikh methodo tis Byzantinhs Moysikhs. In *Proceedings of the 8th* ***Presentation of the Greek Society for Music Education (G.S.M.E.),*** *37*(4), 339-351

Pitsikalis, V., Katsamanis, A., Theodorakis, S., & Maragos, P. (2015). Multimodal gesture recognition via multiple hypotheses rescoring. *The Journal of Machine Learning Research*, *16*(1), 255-284.

Race, P. (2014). *The lecturer's toolkit: a practical guide to assessment, learning and teaching*. Routledge.

Rasamimanana, N., & Bevilacqua, F. (2008). Effort-based analysis of bowing movements: evidence of anticipation effects. *Journal of New Music Research*, *37*(4), 339-351.

Shute, V. J. (2008). Focus on formative feedback. *Review of educational research*, *78*(1), 153-189.

Stathopoulou, I. O., & Tsihrintzis, G. A. (2011). Emotion recognition from body movements and gestures. In *Intelligent Interactive Multimedia Systems and Services* (pp. 295-303). Springer, Berlin, Heidelberg.

Ververidis, D., Karavarsamis, S., Nikolopoulos, S., & Kompatsiaris, I. (2016, July). Pottery gestures style comparison by exploiting Myo sensor and forearm anatomy. In *Proceedings of the 3rd International Symposium on Movement and Computing* (p. 3). ACM.

WHEN IN ROME! THE ART, INNOVATION, AND IMPACT OF ANCIENT ROMAN MAKEUP

KYLA KAZUSCHYK
Louisiana State University
105 Music and Dramatic Arts
Baton Rouge, LA 70803
kkazuschyk@lsu.edu

ABSTRACT

One often overlooked area in which the artistic and technological advancements of ancient Rome demonstrated high regard for cultural achievements is in the realm of cosmetic makeup. Romans utilized new materials to augment the physical human form, to express personal identity, and to show affiliations within communities. Likewise, ancient Roman cosmetic use contributed to cultural distinctions between socioeconomic groups and social classes. People created standards of beauty that would continue to evolve and grow over hundreds of years. In this paper, I examine the intersection of art and technology at the core of Roman cosmetic practice and discuss the wider cultural legacy of Roman makeup.

Keywords: Art, Technology, History, Makeup, Cosmetics, Hairstyles, Rome.

FACTORS INFLUENCING STUDENTS' CHOICE OF MATHEMATICAL LEVEL AT HIGH SCHOOL AND THE IMPACT THIS HAS ON PERFORMANCE ON BUSINESS COURSES IN NORWAY

LEIV OPSTAD[1] and TORBJØRN ÅRETHUN[2]

[1]Norwegian University of Science and Technology
Trondheim

[2]Western Norway University of Applied Sciences
Sogndal

ABSTRACT

Students attending courses in theoretical mathematics (N- or S-maths) in high school obtain significantly better marks in Bachelor studies in business administration than students attending courses in applied mathematics (P-maths). The purpose of this article is to identify the reasons behind business students' choice of course in mathematics in high school, and what impact this choice has on their performance on the introductory course in mathematics in business school.

We conducted a survey among students attending the introductory course in two business schools in the autumn of 2017, with 213 respondents.

Lack of interest in mathematics is a significant factor explaining students' choice of courses in applied mathematics in high school. For students who found high school mathematics difficult, attending a P-course was the easiest way to graduate from high school. In addition, the effort required to pass a P-course was significantly less than that required to pass a theoretical course. Strategic reasoning might therefore also be a reason for taking P-courses.

Those who opted for N-courses in high school had a profound interest in mathematics, while students choosing S-courses emphasized that attending those courses would enable them to complete university study in economics and business administration.

Students attending P-courses at high school found that the introductory course in mathematics required more effort than did students with theoretical mathematics from high school.

Keywords: Business School, Choice of Mathematics at High School, Quantitative Analysis.

Introduction

Norwegian high school students have three options among mathematical courses: practical mathematics (P-maths), social sciences mathematics (S-maths) or natural science mathematics (N-maths).

Due to the admission rules, this choice does not affect students' chance of enrolling in a business studies course. Admittance is based on the General Point Average (GPA) scores from high school. Bachelor studies in business administration in Norway include a broad range of courses covering both quantitative and qualitative subjects. International studies report a positive correlation between prior mathematical skills and grades achieved on business and economic courses at university level (Alcock, Cockcroft, & Frank, 2008; Ballard & Johnson, 2004). Opstad (2018) found that the choice of mathematical pathway in high school has a substantial impact on students' performance on business courses. Students with P-maths from high school achieved significantly lower grades in the introduction course in business mathematics. Not surprisingly, those students also fall behind in quantitative courses like business economics and microeconomics. Even though former P-students achieve a slightly better overall score in qualitative business school courses compared to quantitative subjects, they are outperformed by S- and N-students. However, there is no difference in GPA scores from high school among the three categories of mathematical student.

Policymakers, employers and professors are all concerned about the low rate of high school students opting for the most advanced mathematics courses, S- or N-courses. However, due to limited research on the factors behind the choice of maths path in high school, policymakers have not been able to implement proper measures to increase high school students' incentive and propensity to choose advanced mathematics.

The mathematical level from high school also has an impact on students' attitude towards mathematics (Opstad & Årethun, 2019). Those with P-mathematics have poor self-confidence in mathematics and find the subject less useful.

However, those who succeed in the mandatory introduction course in mathematics perform well on the succeeding business courses (Opstad, 2017). This indicates that there is a heterogeneous group of students with a background in practical mathematics from high school. Some of them have a low ability to learn mathematics, while others have high skills. We want to find out more about high school students' decision. The aim of this paper is to analyse the determinants behind the individual's choice of mathematical pathway in high school.

The Choice of Maths Path in High School

In the first year in high school, students can choose between a course in practical mathematics (P-basic) that includes basic algebra and geometry, and a course in theoretical mathematics (combined S- and N-basic). The course in theoretical mathematics includes medium advanced geometry and theory of functions, and some basic finance. This is a mandatory course for students who want to embark on more challenging mathematics (advanced S- or N-courses) in their final two years in high school.

In order to get access to the N-courses in the second and third years in high school, the theoretical first-year course in mathematics (combined S-/N-basic) is mandatory. The P-basic path followed by N-courses is not an option. The N-path is particularly designed for students entering university studies in technical and natural sciences. The S-path is designed for students entering university studies in economics, finance and business administration.

Table 1. Number of individuals and their grades in mathematics courses in Norwegian high schools, 2018

Course name	Average grade Females	Average grade Males	Average grade Total	Number of females	Number of males	Total
Basic P-course	3.0	3.1	3.1	2,146	1,559	3705
Basic, common S- and N-course	3.6	3.4	3.5	1,137	1,039	2,176
P-courses (P-path)	2.8	2.9	2.8	8,139	6,060	14,199
Advanced N-courses (N-path)	3.7	3.4	3.5	3,729	5,597	9,326
Advanced S-courses (S-path)	3.3	3.0	3.2	3,863	3,053	6,916

Source: The Norwegian Directorate for Education and Training. School year 2017/2018.

In excess of 60 per cent of first-year students in Norwegian high schools opt for the basic P-course rather than the basic common S- and N-course. Males are the majority on N-courses, while there are more females than males on both the S- and the P-courses. Overall, the male dominance on theoretical maths courses—N- and S-courses—is significantly higher than the female dominance on P-courses. On the other hand, females do significantly better on all N- and S-courses than males, while males slightly outperform females on P-courses.

Studies in high schools reveal that many students change mathematical level during high school. Thorsen (2015) points out that a lot of students starting on the basic common S- and N-courses drop out and embark on the basic P-course. A significantly larger share of P-students compared to N-students do not enjoy mathematics and they choose their maths path because it is the easiest and least laborious, fulfilling the requirements for enrolment into university studies. Among students who opt for the N-course although they do not enjoy mathematics, there is a disproportionately high dropout rate compared to other students attending this maths path (Sætrum, 2015).

A disproportional significantly higher rate of high school students with average to low grades in mathematics switch from the basic common S- and N-course to the basic P-course as a first-year student compared to students with high grades in mathematics. These students are below average when it comes to motivation to learn mathematics (Sætrum, 2015). Students view the transition from mathematics in primary school to the basic common S- and N-courses in high school as demanding and challenging (Bratlie & Osnes, 2016). Even though they put a lot of effort into studying mathematics, the basic combined S- and N-course is more difficult than expected. This course has a wide range of topics and there is a steep learning curve. There is a significant gap between prior skills in mathematics and the skills required to complete this course. One of the respondents stated: "I started on the basic combined S- and N-course, but the tutor was not able to teach me anything. Nobody in the class understood anything, so I switched to P-maths."

Students who switch to P-maths argue that they do not wish to get a deep insight into mathematics and that P-mathematics is adequate for enrolment into university studies (Sætrum, 2015). The main characteristics of students completing the basic common S- and N-course are above average grades in mathematics from primary school and a high motivation for and interest in learning mathematics (Bonesrønning & Haraldsvik, 2014; Sætrum, 2015). Having a career plan and a positive attitude towards mathematics will also increase the probability of completing the basic common S- and N-course (Ely & Hittle, 1990; Sætrum, 2015).

The contribution of this paper is to offer more information on what causes students' selection of a particular mathematics path in high school.

Choice of maths path and course achievement

There is a vast amount of literature regarding the correlation between a person's mathematical skills and his/her performance in business school. Masui, Broeckmans, Doumen, Groenen, and Molenberghs (2014) found that mathematical skills were an important antecedent for individuals' achievements in business and economics subjects at university level.

There is a significant positive correlation between mathematical skills and average grades in quantitative-oriented subjects in business school like economics, managerial economics, business economics and finance (Alcock et al., 2008; Arnold & Straten, 2012; Ballard & Johnson, 2004; Brown-Robertson, Ntembe, & Tawah, 2015; Mallik & Lodewijks, 2010). Students' ability to apply advanced mathematics as a tool to solve economic and financial puzzles will significantly affect their marks in quantitative-oriented subjects and students lacking basic knowledge in maths from high school do have severe difficulty completing their first year at business school (Mallik & Shankar, 2016).

Possessing proper mathematical skills from high school will improve a student's ability to structure, analyse and solve problems in quantitative subjects. Some studies find a significant, positive correlation between individuals' mathematical skills and grades in their exams in qualitative university courses like law subjects (Alcock et al., 2008; Brookshire & Palocsay, 2004). Bjorvatn, Huse, and Nilsen (2018) found similar results for qualitative subjects at Norwegian university colleges for teacher education: even though maths is not one of the key subjects in the teacher education programme, students with P-courses from high school get significantly lower grades on this programme and they have a lower completion rate than peers with N- or S-courses. Better skills in mathematics will improve students' rational reasoning and help them develop learning strategies to enhance their performance in both qualitative and quantitative subjects.

Students' achievements in business school seem to be positively correlated to their choice of high school maths path. This result has encouraged researchers to find the main factors underlying students' choice of maths course in high school.

These factors can be separated into four categories:

1. Strategic reasons: minimize effort or increase the probability of getting high grades in high school.
2. It is a challenging subject and students can acquire relevant skills for future studies and later careers.
3. Student has an ability to learn mathematics and a genuine interest in the subject.
4. Other factors.

These four factors will affect students' choice of maths path in high school (Figure 1).

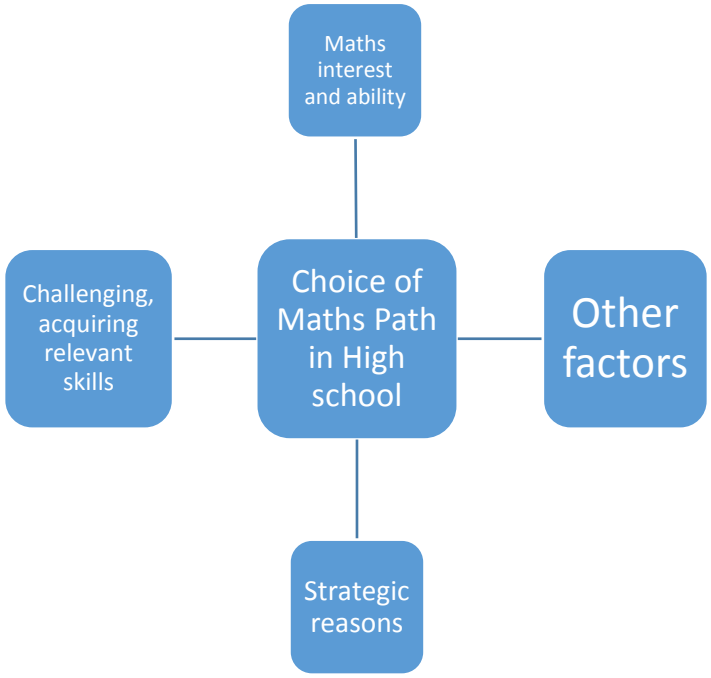


Figure 1. Factors underlying students' choice of maths course in high school

Maths Interest and Ability

Sætrum (2015) studied the factors behind students' choice of maths path in high school. High school students with a high propensity to opt for P-courses have low self-confidence and self-efficacy in mathematics and low motivation for learning mathematics. They dislike mathematics and they got low grades in primary school mathematics. This is in contrast to high school students opting for S- or N-courses. The latter two groups attained high grades in mathematics during primary school; they have always enjoyed maths and they have spent a lot of time working with this subject both in primary school and in high school. These results are similar to those found by Bonesrønning and Haraldsvik (2014).

Maths is a Challenging Subject and students can Acquire Relevant Skills

A large proportion of high school students who are determined to start business studies will opt for S-courses. This maths path is designed for economics and business studies. High school students aiming for technical studies or studies in mathematics or natural sciences will to a large extent choose N-courses. This also applies to students who have academic ambitions but who are not certain about which field or profession to choose. Exams from N-courses will give access to the entire range of university studies if the student can satisfy the grade point requirements. Students with P- or S-courses are excluded from some university studies (e.g. medicine and engineering). However, P-courses could be the best option for students with no particular interest in mathematics. These courses are less time-consuming and will allow students access to the vast majority of study programmes. According to Sætrum (2015), many students claim that they will not attend N-courses because the university studies they are aiming for do not require such courses.

Thorsen (2015) asked 165 students from different high schools in Norway about their preferred university programme. One in three students attending S-courses was aiming for university study in either business or economics, while about one in four students attending P-courses preferred these university studies. The majority of students attending N-courses planned to study engineering or natural sciences, and just a small number of N-students aimed for studies in business or economics.

Strategic Reasons

A rational student in high school who wants to enter a university study with restricted access could opt for P-courses rather than S- or N-courses even if he/she has proper mathematical skills and abilities. It is considered to be more feasible for skilled students to get high grades on P-courses, and with less effort and time spent on mathematics, they can spend more time on other subjects. The vast majority of Norwegian business school studies have restricted access.

In a study of 64 students who opted for P-courses, Thorsen (2015) found that 75 per cent were eager to perform well in school and were focused on attaining good course grades. They frequently compared their own achievements with the achievements of classmates, and 80 per cent of the students expected higher maths grades when opting for P-courses rather than for S- or N-courses. These results indicate that some students opt for P-courses for strategic reasons, and these incentives are amplified when students expect to get grades at, or slightly below, the access limit for their preferred study programme. In addition, attending P-courses will be less time-consuming, thereby leaving more time and effort for other subjects. Finally, high school students that are risk averse may tend to opt for P-courses, thereby increasing their probability of passing the final exam.

Other Factors

Thorsen (2015) found that self-efficacy, as well as advice and influence from friends and career counsellors, affected the choice of maths path among students in high school.

Students who are focused on improved career prospects and accessibility to a wide range of university studies have a high probability of choosing theoretical mathematics (S- or N-courses) in high school (Grønmo, Onstad, & Pedersen, 2010). Maths teacher's skills and didactic abilities also positively affect the probability of opting for

theoretical maths, while advice from either parents, friends, teachers or career counsellors does not have any significant impact.

Data

We collected data from two Norwegian Bachelor programmes in business and administration: NTNU Business School and Western Norway University of Applied Sciences (HVL) Department of Business Administration. A questionnaire was handed out in an arbitrarily selected lecture in the mandatory first semester subject Introductory Course in Mathematics in the autumn of 2017. There were 213 student responses: 151 were students at NTNU, while 62 studied at HVL. Table 2 shows the distribution of first-year business school students' maths courses in high school.

Table 2. Maths course at high school for students at HVL and NTNU

High school maths course	**HVL**		**NTNU**		**TOTAL**	
	Number of students	Percentage	Number of students	Percentage	Number of students	Percentage
P2	25	60	23	21	48	32
S2	7	17	45	41	52	34
N2	10	24	41	38	51	34
Total	42	101[1]	109	100	151	100

[1]The deviation from 100% is due to rounding.

There were roughly the same number of students on each of the three mathematical courses. There is, on the other hand, a significant difference between the two business schools in this study. Around 60 per cent of the students at HVL opted for the P-course in high school compared to around 20 per cent of the students at NTNU. Most NTNU students graduated from an S-course in their last year in high school, slightly more than the number of N-students. There is a significant difference in maths skills between NTNU students and students attending HVL. The high grades required to get access to NTNU and the large percentage of students with S- or N-courses from high school are the two main factors explaining why students graduating from Bachelor studies at NTNU business school perform very well in post-graduate studies in other departments at NTNU (Møen and Tjelta, 2010).

Asking students at an arbitrarily selected lecture could generate a biased sample. Students highly skilled in mathematics will not necessarily need to attend lectures on this topic, which will probably be the case for some students with S- and N-courses from high school. On the other hand, many students with poor skills, including poor mathematical skills, are frequently absent from lectures. Both of these subpopulations are probably misrepresented in our sample. We have not evaluated the representativeness of the sample. A similar study compared characteristics from the population of students (Bonesrønning & Opstad, 2015). Girls were slightly overrepresented in the sample and the sample GPA score was slightly higher than the population score.

The population in NTNU—the number of students graduating from the introductory course in mathematics—was nearly 300, while around 100 graduated from the course at HVL. This gives an aggregate response rate equal to 60 per cent.

The questionnaire contained a set of statements assessed against a seven-point Likert scale ranging from 1 (fully disagree) to 7 (fully agree). The statements were designed to shed light on multiple dimensions of the four factors determining high school students' choice of maths path: main interest and ability, challenging subject and acquiring abilities, strategic reasoning and supplementary factors.

The statistical method applied was the independent samples t-test. We made two separate comparisons, between P-students and S-students, and between P-students and N-students respectively.

Table 3. Statements regarding choice of maths path in high school (proportion of students in each of the main maths paths. Independent samples t-test, two-tailed)

Reason for choice of maths path	**P2**	**S2**	**N2**	**Level of significance (S2–P2)**	**Level of significance (N2–P2)**
Maths interest and ability					
Mathematics was an interesting subject in high school	3.96	4.66	5.50	(S2–P2)**	(N2–P2)***
I chose the maths path that was best suited for me	3.89	5.06	5.02	(S2–P2)***	(N2–P2)***
Challenging subject, acquiring relevant skills					
Mathematics was a difficult subject in high school	4.31	3.79	3.38	(S2–P2)	(N2–P2)***
I wanted to gain mathematical skills particularly designed for business studies	2.48	5.17	3.57	(S2–P2)***	(N2–P2)***
Strategic reasons					
I wanted to perform well in maths in high school	5.38	5.81	6.18	(S2–P2)	(N2–P2)***
I just attended the maths courses that were required for university studies	3.84	2.31	1.90	(S2–P2)***	(N2–P2)***
It was easy to get high marks in my maths courses in high school	3.88	2.75	1.86	(S2–P2)***	(N2–P2)***
It was not necessary to work hard to get high marks in my maths courses in high school	3.07	1.90	1.68	(S2–P2)***	(N2–P2)***
To fulfil the admission requirements at NTNU	2.00	2.96	2.78	(S2–P2)**	(N2–P2)
Other reasons					
My choice of maths path was influenced by my friends' choice	2.87	1.63	2.14	(S2–P2)	(N2–P2)
My choice of maths path was influenced by the student counsellor's advice	2.72	2.34	2.88	(S2–P2)	(N2–P2)

I chose maths path prior to my choice of university programme	5.39	4.71	5.69	(S2–P2)	(N2–P2)
* Significance level<0.1 ** Significance level<0.05 *** Significance level<0.01					

Table 3 shows the distribution of respondents for each statement depending on their maths path from high school. The table is structured according to Figure 1, and captures some of the statements within each of the four main factors behind students' choice of maths path in high school: main interest and ability, acquiring relevant skills, strategic reasoning and other reasons.

For three of the selected explanatory factors, there is a significant difference between students depending on their choice of mathematical pathway in high school. Students with P-mathematics have lower interest, ability and skills, and the gap between P-students and N-students is larger than between P-students and S-students.

Analysis

Interest and Ability

The choice of maths path in high school is an important antecedent for the probability of success in business studies. Students with P-courses from high school have a significantly lower probability of completing a business study degree and they find quantitative subjects very demanding. The main reasons for choosing P-courses are lack of interest and low skills in mathematics. Students with these characteristics are poorly equipped to deal with the introductory course in mathematics and other quantitative subjects in business school. This is in line with results from other studies (Kim, Garcia, & Dey, 2012). Students who are interested in the subject, have high self-confidence and enjoy mathematics prefer N-maths in high school.

The majority of students in high school choose P-courses despite the fact that this maths path is less suited to them and seems to be less interesting compared to students opting for S- or N-maths. The large proportion of high school students opting for P-courses that do not fit with their maths interest indicates that their preferred path, mostly S-courses, was not available to them on their campus. Many of our respondents comment on this aspect:

"This problem is not related to business schools, but rather to some high schools where it is not possible for students to choose S-courses."

Challenging Subject and Acquiring Relevant Skills

The vast majority of the students with S-courses stated that this maths path provided them with mathematical skills that make them well suited for business studies. A significantly smaller number of P-students offered the same statement. Although both P-courses and S- and N- courses allow students access to most university studies, most of the students with a P-maths background found that this maths path did not provide them with adequate skills in mathematics to master business studies.

There was a gap among the students considering whether the chosen pathway was the most appropriate: the score was high for the S- and N-students, but not for P-students. Why do so many P-students believe that their chosen level of mathematics was not the optimal choice after all? One reason might be that they are fully aware of the fact that this kind of mathematics will provide them with insufficient knowledge for further studies, but P-maths was the most convenient choice of mathematics for those who have not yet decides what to study. Therefore they report low scores for whether their chosen mathematics course is suitable for business studies. As expected, this score is high among S-students. The majority in this group are determined to take up future studies in business or economics.

A significantly lower rate of students with N-courses from high school compared to S-students claims that their chosen maths path provides a solid basis for accessing business studies. This may be due to the fact that N-courses

are more adapted to studies in technical and natural sciences, while financial mathematics is almost non-existent in the N-course syllabus.

Students attending N-courses find that kind of maths more difficult than students choosing P-maths. This indicates that some students choose N-maths because they want to challenge their own capacity and ability in calculus, driven by a genuine maths interest.

Strategic Reasons

When making their choice regarding maths path in high school, two out of three students had not yet decided what they wanted to study after graduation. They are young, they face a wide range of opportunities regarding future studies, and they are not able to assess those opportunities. As mentioned above, the majority of high school students might therefore be ignorant when it comes to how well their maths path from high school will fit subjects or programmes in future studies—for instance, whether their high school maths path is adequate to master quantitative subjects in business studies. This can be a reason for students to choose the kind of mathematics that fits their skills. If a student is clever in mathematics, the student may prefer advanced mathematics; however, if a student is struggling with theoretical mathematics, the best option is P-mathematics. On the other hand, high school students could make a strategic choice of maths path for other reasons. A student who wants to maximize the probability of obtaining high marks in high school mathematics may tend to choose the easy way, by opting for P-courses even though he/she is highly skilled in mathematics and has a profound interest in this subject. Getting a high grade in mathematics could ensure an adequate GPA level, allowing access to a preferred study. Thirdly, the data shows that all three groups of students (P-, S- and N-students) wanted to perform well in high school mathematics and carrying separate skills and interest will result in different choice of maths-path. The data show significant differences among students regarding their preferences in making strategic choices. The results confirm that it is easier to get good grades for less work in P-courses compared to S- and N-courses, and a higher proportion of P-students opted for P-courses based on strategic reasoning.

Other Factors

Compared to those with P-mathematics, a significantly higher proportion of those with N-maths did not know which further studies to apply for. Therefore, some students may have chosen the most advanced mathematics because it provides them with a wide range of opportunities. The admission ticket for studying science or medicine, for instance, is N-mathematics.

Influence from friends, maths teachers and student counsellors on students' choice of maths path in high school is insignificant. For students achieving average grades in high school mathematics, parents had a significant influence on their children's choice of maths path (Bonesrønning & Haraldsvik, 2014). Students with academic parents get significantly better grades on N-courses than other students, while students with non-academic parents tend to choose P-maths in high school.

Admission to university studies is based on students' GPA, with no particular requirements regarding mathematics in high school. This study suggests that giving higher priority to students with S- or N-courses will result in better grades and lower dropout rates in business school. On the other hand, small-scale business schools, mostly located in rural areas, have few applicants and a significantly higher proportion of students that attended P-courses in high school compared to students in more popular business schools, like NTNU Business School. Even though there are strict nationwide guidelines regarding minimum requirements and a standard curriculum in Norwegian business schools, a survey conducted by Møen and Tjelta (2010) indicates that business studies with high admission requirements are less generous in issuing good grades than less popular studies are.

A significantly smaller amount of P-students than S- or N-students claim that these courses provide them with adequate mathematical skills to perform well in business school. One could argue that business schools should alter their admission requirements to ensure that only students with S- or N-maths are entitled to these studies. One major problem, however, is that many high schools do not provide S-courses. Altering the admission requirements could therefore result in a significant drop in the number of eligible applicants, particularly into business schools in rural areas.

Limitations

Our analyses of students' reasons for their choice of maths path in high school are based on their opinions as business school students. Some of the answers will be influenced by a hindsight reasoning and the validity would have been better had the questionnaire been handed out in high school as well as in business school.

The sample of students is collected from two business schools, NTNU and HVL. Even though the sample of students within each business school is unbiased, this is not the case for the two business schools. While the admission requirements are very tough at NTNU, HVL has free admission and only requires that high school is completed. The sample thus involves business schools with moderate admission requirements, and this selection bias will probably affect the results regarding students' motives for their choice of maths path.

Our conclusions could be affected by the limited number of dimensions on some of the factors. Few dimensions covering a particular factor may result in either missing an important aspect influencing students' choice of maths path or not obtaining significant results on the existing dimensions.

Concluding Remarks

Students with a background in S- and N-courses in high school find mathematics in business school quite easy compared to students with P-courses, due to higher skills in most mathematical topics prior to the introductory course. A larger proportion of students with P-courses than students with S- or N-courses chose their maths path in high school based on expected convenience and anticipated good grades. Students opting for N-courses have a genuine interest in mathematics and they chose this maths path because it is considered to be challenging and difficult.

The choice of maths path is made at an early stage in high school when most of the students lack solid plans regarding future studies and a professional career. However, students who chose S-courses stand out. The sole significant factor for choosing this maths path was to acquire relevant skills for future studies in economics or business administration. The analysis confirms that P-courses are not well suited for business studies.

Adding S- or N-courses from high school to the present requirements could encourage high school students to opt for advanced mathematics and contribute to better results and lower dropout rates from business schools.

References

Alcock, J., Cockcroft, S., & Frank, F. (2008). Quantifying the advantage of secondary mathematics study for accounting and finance undergraduates. *Accounting & Finance*, *48*(5), 697–718. https://doi.org/10.1111/j.1467-629X.2008.00261.x

Arnold, I., & Straten, J. T. (2012). Motivation and math skills as determinants of first-year performance in economics. *The Journal of Economics Education*, *43*(1), 33–47. https://doi.org/10.1080/00220485.2012.636709

Ballard, C., & Johnson, M. F. (2004). Basic math skills and performance in an introductory economics class. *Journal of Economic Education*, *35*(1), 3–23. https://doi.org/10.3200/JECE.35.1.3-23

Bjorvatn, K., Huse, I., & Nilsen, E. O. (2018). Er matematikk viktig for å lykkes i lærerstudiet? *Samfunnsøkonomen*, *4*, 43–50 (in Norwegian).

Bonesrønning, H., & Haraldsvik, M. (2014). *Students' choice of advanced mathematics courses.* Unpublished paper. Trondheim: Institutt for samfunnsøkonomi, NTNU.

Bonesrønning, H., & Opstad, L. (2015). Can student effort be manipulated? Does it matter? *Applied Economics*, *47*(15), 1511−1524. doi:10.1080/00036846.2014.9979

Bratlie, M. E. V., & Osnes, E. R. (2016). Lærersamarbeid: Erfaringer fra Hellerud videregående skole. *Tangenten*, *1*, 25–29 (in Norwegian).

Brookshire, R. G., & Palocsay, S. W. (2004). Factors contributing to the success of undergraduate business students in management science courses. *Decision Sciences Journal of Innovative Education*, *3*(1), 99–108. https://doi.org/10.1111/j.1540-4609.2005.00054.x

Brown-Robertson, L. T. N., Ntembe, A., & Tawah, R. (2015). Evaluating the 'unserved student' success in economic principle courses. *Journal of Economics and Economic Education Research*, *16*(3), 13–23.
Ely, D., & Hittle, L. (1990). The impact of math background and performance in managerial economics and basis finance courses. *Journal of Financial Education*, *16*(Fall), 59–61.

Grønmo, L. S., Onstad, T., & Pedersen, I. F. (2010). *Matematikk i motvind: TIMSS advanced 2008 i videregående skole*. Oslo: Unpublished paper (in Norwegian).

Kim, D. G., Garcia, F., & Dey, I. (2012). Calculus and success in a business school. *Research in Higher Education Journal, 17, 1–9*.

Mallik, G., & Lodewijks, L. (2010). Student performance in a large first year economics subject: Which variables are significant? *Economic Paper*, *29*(1), 80–86. https://doi.org/10.1111/j.1759-3441.2010.00051.x

Mallik, G., & Shankar, S. (2016). Does prior knowledge of economics and higher level mathematics improve student learning in principles of economics? *Economic Analysis and Policy*, *49*, 66–73. https://doi.org/10.1016/j.eap.2015.12.001

Masui, C., Broeckmans, J. B., Doumen, S., Groenen, A., & Molenberghs, G. (2014). Do diligent students' performance better? Complex relationship between student and course characteristics, study time, and academic performance in higher education. *Studies in Higher Education*, *39*(4), 621–643. https://doi.org/10.1080/03075079.2012.721350

Møen, J., & Tjelta, M. (2010). Grading standards, student ability and errors in college admission. *Scandinavian Journal of Educational Research*, *54*(3), 221–237.

Opstad, L. (2017). Matematikkens betydning for suksess ved økonomisk-administrative studier. *Bred og spiss! NTNU Handelshøyskolen 50 år: En vitenskapelig jubileumsantologi* (in Norwegian).

Opstad, L. (2018). Success in business studies and mathematical background: The case of Norway. *Journal of Applied Research in Higher Education*, *10*(3), 399–408.

Opstad, L., & Årethun, T. (2019). Choice of courses in mathematics at upper-secondary school and attitudes towards mathematics among business students: The case of Norway. *International Journal of Learning, Teaching and Educational Research*, *18*(7), 228-244.

Sætrum, T. M. (2015). *Utforskning av faktorer som påvirker elevers valg av matematikkfag*. Masteroppgave, Universitet i Stavanger (in Norwegian).

The Norwegian Directorate for Education and Training (2019). *Karakterer i videregående skoler skoleåret 2017-18.* Collected from https://www.udir.no/tall-og-forskning/statistikk/statistikk-videregaende-skole/karakterer-vgs/ (in Norwegian)

Thorsen, C. A. (2015). *Faktorer som påvirker valg av matematikkløp på videregående skole.* Masteroppgave i matematikkdidaktikk, Universitetet i Oslo (in Norwegian).

RELATIONSHIP BETWEEN LEARNING STYLES AND FIRST GENERATION COLLEGE STUDENTS AND ACADEMIC SUCCESS

LYNNE M. CELLI, PH.D.
Dean, of Graduate Professional Education
Endicott College, Beverly, MA USA

ABSTRACT

This interactive presentation will focus on research on post-secondary contemporary 21st education regarding learning styles and first generation college students The presentation will connect the research on learning styles and the learning needs of first generation college students. Further, the discussion will address the characteristics of first generation college students, research-based pedagogy that post-secondary professors must implement to assure academic success for these students, and institutional variables also necessary to be implemented for this academic success to occur. The connection of research regarding learning styles, pedagogy, and characteristics of first generation college students will made using application of this research to practice in college settings. Concrete examples of how these practices will be presented and necessary steps for successful implementation of the current research in these areas will also be presented.

Keywords: Learning Styles, Auditory, Visual, Kinesthetic, First Generation College Students, Characteristics of First Generation College Students, Institutional Variables for Success of First Generation College Students.

IMPACT OF AQUATIC THERAPY ON POSTURAL CONTROL FOR CHILDREN WITH NEURODEVELOPMENTAL DISORDERS (ASD)

MAHMOUD ELSAYED IBRAHIM ELSAYED
Department of Health Science Sport ,Banha University, Egypt
***** *Correspondence: Mahmoud.alsayed@fped.bu.edu.eg*

ABSTRACT

Children with A neurodevelopmental disorders (ASD) typically exhibit impairments in three core symptom areas (deficits in communication, abnormal social interactions and restricted and/or repetitive behaviors). Within the third core category, symptoms related to stereotyped body movements and abnormalities in posture have been observed. Research suggests the postural control system in individuals with autistic disorder is immature and may never reach adult levels. Functional independence requires a postural control system that provides both postural stability during quiet stance and also dynamic stability as the body's center of mass COM) moves away from its base of support.

This study investigated aquatic program to improve the posture control of children with neurodevelopmental disorder .10 childs of autism between the ages of 7 and 10 years were included in this study.Berger Balance Test Scale (BBTS) was used to assess posture.

The aquatic therapy program has a positive effect on the posture control of children with neurodevelopmental disorders in the experimental group and better than the traditional rehabilitation training of the control group.

Keywords: Neurodevelopmental Disorders, Autism, Posture Control , Balance, Aquatic Therapy.

INTRODUCTION

Autism is a neurodevelopmental disorder diagnosed according to specific impairments in the areas of communication, reciprocal interaction and stereotypic behavior (DSM-IV., 2000). Autism Spectrum Disorder is an umbrella term for diagnoses that include Autistic disorder, Asperger's syndrome, and Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS) (National Institute of Mental Health [NIMH], 2008; Tomchek et al., 2010). ASD's are neurobiological, developmental disorders that occur within the first three years of life and continue throughout the lifespan (American Psychiatric Association [APA], 2000; Autism Speaks, 2009). Children diagnosed with an ASD may have difficulties in all areas of function but are particularly challenged with communication, social interaction, behavior, and sensory processing (Case-Smith & Arbesman, 2008; NIMH, 2008).

In addition, many may display repetitive behaviors such as flapping or rocking, which are hypothesized by some (Shoener, Kinnealey, & Koenig, 2008) to be responses to the need for increased or decreased sensory input. Children with an ASD may also have motor difficulties and delays (Baranek, 2002; Dawson & Watling, 2000). research in the area of motor development has suggested that movement disturbances may be present during infancy and may be considered oneof the earliest signs of autism (Teitelbaum, Teitelbaum, Nye, Fryman, & Maurer, 1998). Furthermore, motor problems have been the most frequently reported non–verbal deficits inchildren with autism (Noterdaeme, Mildenberger, Minow, & Amorosa, 2002).

An immature postural control system can be a limiting factor on the emergence of other motor skills (such as coordinated hand/head movements and inhibition of reflexes), may constrain the ability to develop mobility and manipulatory skills (Shumway-Cook & Woollacott, 2001), and is of significant importance to quality of life. Therefore, systematically evaluating postural control in this population may be a first step towards determining the best approach for improving postural stability and related skills (mobility and manipulation).

Functional independence requires a postural control system that provides both postural stability during quiet stance and also dynamic stability as the body's center of mass (COM) moves away from its base of support. The trunk plays an important role in the organization of postural control and balance reactions because it holds the center of all body mass and holds therefore the center of gravity. The trunk also provides for free movement of the arms and the hands by balancing within the base of support(Bertenthal and Von Hofsten 1998).

Postural control is defined as the act of maintaining, achieving, or restoring a state of balance during any posture or activity (Pollock et al., 2000). Three major systems are involved in maintaining postural control: vision, vestibular function, and somatosensory. First, vision determines how one's body is positioned relative to the environment. Based on these perceptions of body and space, a person can prepare and perform movements in a specific situation.

Next, the vestibular system provides information about changes in head position and body movement to determine equilibrium. Lastly, somatosensory system is responsible to perceive the information about the surface or BOS changes. To maintain stable body posture, aperson has to select appropriate sensory input, adjust timing of movement, and determine body position from the environmental changes. Thus, deficits in the postural control systems can limit the development of balance, mobility, coordination, and action performance during physical activity.

Previous studies over recent decades have reported greater deficits in postural control in children with ASD compared to those in typically developingchildren (Fournier et al., 2010; Kohen-Raz, Volkmar, & Cohen, 1992; Minshew,Sung, Jones, & Furman, 2004; Molloy, Dietrich, & Bhattacharya, 2003; Memari etal., 2013). A recent study by Memari and colleagues (2013) reported deficits in postural control in 21 children with ASD (aged 9-14 years old) compared to agematched typically developing children. Each participant was asked to stand still for 20 seconds and completed two trials. A force plate measured COP trajectory including sway area (cm2), mean velocity (degrees per second), as well as COP displacement (cm) in the anteroposterior (AP) and the mediolateral (ML) directions. The results demonstrated that children with ASD have greater postural sway compared to typically developing children. Furthermore, children with ASD display more unstable postural control in the ML direction rather than the AP axis while typically developing children have higher sway in the AP than ML direction. The authors explained that children with ASD may acquire a balance between the AP and the ML stabilizing muscles later in life. Therefore, the muscle imbalance might be related to directional instability and postural immaturity in children with ASD (Memari et al., 2013)

Water exercises has been a major part of the great scientific development as it has become used not only in improving physical fitness or as a therapeutic exercise for sports injuries, but has become much more involved in the rehabilitation of special needs groups.

Water properties of buoyancy, hydrostatic pressure, and thermodynamics have been credited with aiding the effectiveness of therapies in the aquatic environment Becker, 2009; Broach & Dattilo, 1996; Dale, MacDonald, & Messer, 2005). Buoyanc helps to reduce the load of body weight and can be used to assist, support, or to provide resistance. (Becker, 2009; Broach & Dattilo, 1996). Hydrostatic pressure exerts an equal and consistent amount of pressure on all submerged parts of the body, and provides resistance to help increase muscle strength and aerobic capacity without overstressing soft tissue (Fragala-Pinkham, Haley, & O'Neil, 2008; Getz, Hutzler, & Vermeer, 2006.)

The researcher noted that there are weaknesses in the ability to posture control of children with neurodevelopmental disorders as some studies showed them compared to peers of ordinary children, and it is important to use water therapy therapy for neurodevelopmental disorders children and that category through the little studies in some areas Kinetic, social and behavioral.

The researcher also found that the training during the water center is one of the best and best ways to help develop the motor abilities and work to relax this class because it is characteristic that they are characterized by hyperactivity and the water center works to reduce Hyperactivity and therefore a good response to rehabilitation programs.

Hence, the problem of this research was crystallized through the design of a water rehabilitation program to improve the posture control of children with neurodevelopmental disorder. This prompted the researcher to use water rehabilitation.

Material Methods

Participants

The study was conducted in the centre of Physiotherapy and Rehabilitation for special need . study sample was randomly selected from children with neurodevelopmental disorders. The basic research sample was (10) children after the exclusion of children with various disabilities and multiple disabilities. They were divided into two groups, one experimental, five children, the other a control group, (5) to carry out exploratory studies

Data collection procedure

Pediatric Balance Scale (PBS) consists of 14 items balance-related skills,with a maximum score of 56. The skill items include sitting to standing, standing to sitting, transfers, standing unsupported, sitting unsupported, standing with eyes closed, standing with feet together, standing with one foot in front, standing on one foot, turning 360 degrees, turning to look behind, retrieving object from floor, placing alternative foot on stool, and reaching forward with outstretched arm. PBS was scored after completion of the static balance tests in pre- and post-assessments

Result

Table 1. Shown the age, Anthropometric Characteristics Scale for the experimental Group (Mean ± SD)

Group	N	Age [years]	Weight [kg]	Height [cm]
Experimental , control and exploratory studies	15	9.73 ± 0.45	33.60 ± 3.94	135.66± 0.72

Table 1 shown the age, Anthropometric Characteristics. There no significant differences were observed in the anthropometric characteristics for the subjects in all Group

Table 2 The value of "Z" to denote the differences between the average grade of the posture control test scores for the pre-test and post-test for the experimental group

Various	Z value	Total ranks	Medium ranks	N	Rank distribution	Level of significance
Static posture control	2.023	0	0	0	negative	Significance 0.004
		15	3.00	5	postive	
		-	-	0	equal	
DYNAMIC posture control	2.041	0	0	0	negative	Significance 0.004
		15	3.00	5	postive	
		-	-	0	equal	
Posture control	2.023	0	0	0	negative	Significance 0.004
		15	3.00	5	postive	
		–	–	0	equal	

the value of Tabulated (z) were significant level of 0.005 = 1.96**.**

Table (2) shows that the calculated (z) value is greater than the Tabulated (z)value at a significant level of 0.005, which indicates that there are statistically significant differences between the pre-post measurement in favor of the post measure in the posture control test of the children of the neurodevelopmental disorder.

Table (3). The value of "Z" to denote the differences between the average grade of the posture control test scores for the pre-test and post-test for the control group.

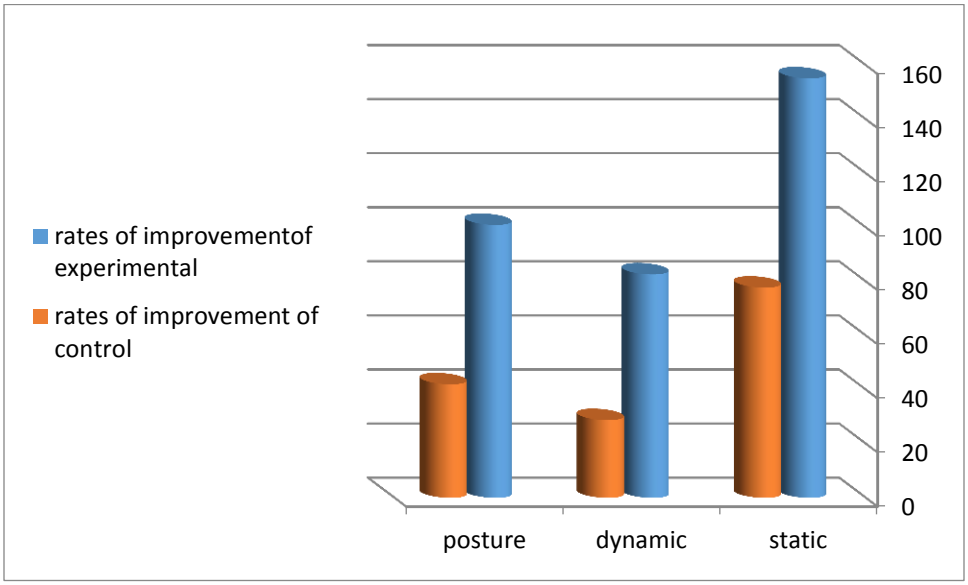
Various	Z value	Total ranks	Medium ranks	N	Rank distribution	Level of significance
Static posture control	2.032	0	0	0	negative	Significance 0.004
		15	3.00	5	postive	
		-	-	0	equal	
Dynamic posture control	2.032	0	0	0	negative	Significance 0.004
		15	3.00	5	postive	
		-	-	0	equal	
Posture control	2.032	0	0	0	negative	Significance 0.004
		15	3.00	5	postive	
		-	-	0	equal	

Table (3) shows that the calculated (z) value is greater than the Tabulated (z)value at a significant level of 0.005, which indicates that there are statistically significant differences between the pre-post measurement in favor of the post measure in the posture control test of the children of the neurodevelopmental disorder

Table (4). The value of "Z" to denote the differences between the average grade of the posture control test scores for the post-post test for the experimental group and control group.

Various	N	Mann-Whitney U	Z value	Total ranks	Medium ranks	Level of significance
Static posture control	5	2.00	-2.22	38.00	7.60	Significance 0.004
				17.00	3.40	
Dynamic posture control	5	0.00	-2.62	40.00	8.00	Significance 0.004
				15.00	3.00	
posture control	5	0.00	-2.61	40.00	8.00	Significance 0.004
				15.00	3.00	

Table (4) shows that differences between the post-post measurement between experimental group and control group in favor of the post measure in the posture control test for experimental group of the children of the neurodevelopmental disorder



Rates of improvement between pre-post measurement of expermintal and control group in the posture control tests of the research sample

Discussion

Table (2) shows that there are statistically significant differences between the pre-post measurement in favor the post-measurement of the experimental group in the static control , dynamic control and the total control of the posture. The researcher points out that the result in the differences between the two indicators indicates the positive effect of water training exercises on the posturel control For children with neurodevelopmental disorders, training in the water center, which works against gravity, as well as buoyancy to reduce weight and low pressure exerted on the joints, leading to more active and more flexible movement of children.

These results are consistent with a study conducted by **Kathleen Franzen (2013)** to study the effect of water rehabilitation on children with neurodevelopmental disorders, a systematic and survey study of studies that used hydrotherapy in rehabilitation of (ASD). The most important results were improvement in the variables of motor skills, functional abilities and balance.

And the study of **Shams Elden Mohamed (2017)** which used water rehabilitation to improve some of the motor and functional abilities and swimming skills of children of neurodevelopmental disorders.

Table (3) shows that there are statistically significant differences between the pre and post measurement in favor of the post measurement in the control group in the posturecontrol test for children of neurodevelopmental disorders. The results are due to the traditional program and the training method followed by the control group. On the continuous practice and the motor performance and balance resulting from the continuous practice of training, which led to improvement of the physical control under consideration.

The results of also are consistent with **Phillip McKeen** (2013), who used motor skills training to improve balance, reflex speed and visual and manual synergy.

Table (4) shows that all calculated of z values are greater than the Tabulated (z)value in the posture control test, indicating significant statistical differences between the post measurement of the experimental and control groups for the benefit of the post measurement of the experimental group.

It is clear from chart that the difference in the rate of improvement and the trend of improvement was in favor of the experimental group in the posture control test for the sample children .

The result agrees with **Kathleen Franzen (2013)** that the goal of water rehabilitation is to enhance the ability to perform daily activities compared to motor exercises outside the watercourse. The hydrotherapy has an effective role in improving the motor functional abilities, increasing the weight of the body and thus reducing the effect on the various joints.

Also **Betitti et al. (2007)** agree with this study that water training in particular works to reduce neurodevelopmental disorder and improve motor abilities.

Conclusion

The aquatic therapy program has a positive effect on the posture control of children with neurodevelopmental disorders in the experimental group and has had a positive effect on the posture control of children with neurodevelopmental disorders in the experimental group better than the traditional rehabilitation training of the control group.

References

Allison Teske (2018): *Exploring Hydrotherapy with Autism , The University of Akron Williams Honors College***.**
Bertenthal, B., & Von Hofsten, C. (1998). Eye, head and trunk control: The foundation for manual development. Neuroscience & Biobehavioral Reviews,
Cheung, P. P., & Siu, A. M. (2009): A comparison of patterns of sensory processing inchildren with and without developmental disabilities. Research in DevelopmentalDisabilities, 30, 1468-1489. doi:10.1016/j.ridd.2009.07.009.
DSM-IV., A. P. A. T. F. o. (2000). Diagnostic and statistical manual of mental disorders : DSMIV-TR (4th ed.). Washington, DC: American Psychiatric Association.
Gepner, B., Mestre, D., Masson, G., & de Schonen, S. (1995). Postural effects of motion vision in young autisticchildren. Neuroreport

Hay, L., & Redon, C. (2001). Development of postural adaptation to arm raising. Experimental Brain Research

Joseph PW (2004): *Adapted physical education and sport, human kinetics, USA*

Kathleen Franzen (2013): Effectiveness of Aquatic Therapy for Children with Neurodevelopmental Disorders: A Systematic Review of Current Literatur , Doctor of Physical Therapy ProgramThe Sage Colleges School of Health Sciences,
KIMBERLY ANN FOURNIER (2008): STATIC AND DYNAMIC BALANCE CONTROL IN CHILDREN WITH AUTISM SPECTRUM DISORDERS, DOCTOR OF PHILOSOPHY, UNIVERSITY OF FLORIDA .
Maggie Dubois (2011): Aquatic Therapy for Children with an Autism Spectrum Disorder:Occupational Therapists' Perspectives, Master of Science in Occupational Therapy from the University ofPuget Sound .
Minshew, N. J., Sung, K., Jones, B. L., & Furman, J. M. (2004). Underdevelopment of the postural control system in autism. Neurology,.

Molloy, C. A., Dietrich, K. N., & Bhattacharya, A. (2003). Postural stability in children withautism spectrum disorder. Journal of Autism and Developmental Disorders

Monica LG, William G, Shawn FS,(**2007**): Adapted aquatics programming: a professional guide,human kinetics , USA.

Nickel, L. R., Thatcher, A. R., Keller, F., Wozniak, R. H., & Iverson, J. M (**2013**) : Posture Development in Infants at Heightened vs. Low Risk for AutismSpectrum Disorders. Infancy, 18(5), 639-661.
Phillip McKeen(**2013**) : The impact of motor skill training on balance, handeye coordination and reaction in a group of adultswith autism and an intellectual disability, Masters of Human Kinetics at the University of Windsor.
Pitetti KH, Rendoff AD, Grover T, Beets MW (**2007**) : The efficacy of a 9-month treadmill walking program on the exercise capacity and weight reduction for adolescents with severeautism, J Autism Dev Disord. Jul; 37(6):997-1006.
SHAMS-ELDEN Mohamed (**2017**) : EFFECT OF AQUATIC EXERCISES APPROACH (HALLIWICK-THERAPY) ON MOTOR SKILLS FOR CHILDREN WITH AUTISM SPECTRUM DISORDERS, "Perspectives in Physical Education and Sport" - Ovidius University of Constanta, May 18-20, 2017, Romania.
Yumi Kim (**2015**) : Effects of Taekwondo Intervention on Postural Control in Youth with Autism Spectrum Disorder, Master of Science in Kinesiology, California State University, Northridge.

UTILIZATION OF TED TALKS VIDEOS IN FACILITATING THE LESSONS IN SOCIAL SCIENCE: ADULT LEARNERS IN FOCUS

MARIA GREGORIA CONCEPCION, PhD
Higher Colleges of Technology, United Arab Emirates
mconcepcion@hct.ac.ae

ABSTRACT

With the advancement of technology, teachers are challenged on how they could cope with the academic needs of their students - understanding the lessons in class. This qualitative study focused on the adult learners' experiences on how TED Talks Videos enhanced their understanding of the lessons and gathered their views on how the utilization of the strategy be improved. Results revealed that the students generally like the speakers' professionalism and expertise. However, the length of the videos hindered students' interests and understanding. Moreover, the participants mentioned that the videos' factual information and contextual examples helped them understand the lesson well. They also found the subject teachers' additional explanation on the topic was beneficial. They suggested that background information may be given before the videos may be presented. Variant answers, conclusion, and implications were also presented.

Keywords: TED Talks Videos, Social Awareness, Adult Learners.

USING YOGA AND TAI CHI TO REDUCE STRESS IN PARENTS OF CHILDREN WITH DISABILITIES

MONA ALAMRI
Evaluation Proposal
University of Jeddah

Using Yoga and Tai Chi to Reduce Stress in Parents of Children with Disabilities.

There is strong evidence from research literature that parents of special needs children face a high level of stress. Given that parenting a child with disabilities is uniquely challenging and can be extremely stressful. Understanding factors that contribute to parental well-being is of utmost importance. In comparison to parents of typically developing children, parents raising children with disabilities experience more parenting stress (Abbeduto L, Seltzer MM, Shattuck PT,2004
) and have higher rates of depression. Parents who are raising children with disabilities, report significantly higher levels of stress and are more likely to experience depression. Another study(Wolf LC. Brief report,1989)has also indicated that parenting an special needs child may have an im-pact on the parents' health and well-being. Apart from that, having a child with disabilities can drain a family's resources due to expenses such as evaluations, home programs, and various therapies. Other than that, the source of stress may be a matter of strained emotional relationships, necessarily limited family activities and reduced career aspirations, reduced opportunities for social and leisure pursuits, problems of fitting to treatment demands and appointments, educational disadvantages, and the ongoing difficulty in coming to terms with the disability. Therefore, it is important for parents to have a good support system. With the lack of social support, the outcomes can be negative and disturbed the psychological wellbeing of the parents such as depression, social isolation and spousal relationship difficulties. According to Holroyd and McArthur in examining mother's report of stress when raising children with autism, Down's syndrome and children being seen in an outpatient psychiatric clinic, they found that mothers commonly engage in poor health, depressed mood, inordinate time demands and pessimisms in relation to their children's future.
Tai Chi is becoming very famous in the West; it has been practiced in the East for the last few centuries (much longer than centuries) to maintain health and fitness; it is a Chinese way of low-impact mind-body exercise. The self-examined physical and mental health greatly improved with Tai Chi exercise. Also, there is an improvement in health, mood, concentration, mental focus and stress tolerance with yoga strategies. The maximum advantages can be derived if someone gets trained by a yoga expert .Physical activity plays an important role in healthy life, as approved by medical authorities. Marks on the mental health dimension seemed to be specifically receptive to change.

Program Purpose
The purpose of this program is to reduce the sensitivity to stress by yoga and tai chi practices for parents of children with disabilities who are living Dearborn, by giving them the opportunity to satisfy their need for relaxing.

The parents of children with disabilities will attend free yoga and tai chi classes offered at their neighborhood in Hyp fitness specifically for a minimum of one day a week over a total of eight weeks. The purposed study aims to: Explore the effect of yoga and tai chi practice on stress symptoms, by helping the parents of children with disabilities to develop social relationships with their children and improve their feeling of relaxing.

Hypotheses: 1) Tai chi and yoga will be associated with improvements in psychological well-being, including reduced stress

Program Approach
Program Design: This is a randomized controlled intervention program. Two groups will be randomized to house the intervention and the control, in order to prevent informational bias.
Subject Recruitment and Setting:

Participant recruitment will take place at the Dearborn city. An email will be sent to each of the intervention Dearborn residents who are parents of children with disabilities offering them free yoga and tai chi classes. In the control group, an email will be posted to the residents asking them to complete questionnaire survey twice. The intervention sessions will be scheduled at the intervention Hyp fitness gym room. The study will last for eight weeks and consist of two days of yoga classes and two days of tai chi classes. The participants must attend at least one season a week to be included in the program

Intervention Group: Participants in the intervention group will attend free yoga and tai chi classes that are offered in Hyp fitness. The classes will be started during the first week of May 2014. A questionnaire survey will be posted by email to the participants at the beginning of the classes and at end of the eight week of the intervention. An eight-week intervention of yoga and tai chi classes will be offered in the intervention group. The effect of the treatments will be observed by measuring the participants' pre- and post-classes. 20 female and 20 male parents will be included in the intervention group and be compared to the same numbers in the control group.

Yoga and Tai Chi Classes: Subjects in the yoga or tai chi group will attend a minimum of one hour of yoga or tai chi classes each week for eight consecutive weeks. Classes will be held at Hyp fitness for four days a week—two days of yoga and two days of tai chi.

Control Group: The control group will be parents of children with disabilities, do not have access to the intervention group, and are not taking any yoga or tai chi classes, in order to prevent bias. An email will be sent to them to ask for their participation in a questionnaire survey for a $10 gift card from Starbucks. Subjects in the control group will be asked to maintain their routine activities. 20 female and 20 male in the control group will attend two data collection meetings at pre-test and post-test, which will be time-matched to the weeks during which subjects in the yoga/tai chi groups will provide equivalent data.

Program Timeline

Study months	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April
IRB submission/study prep	**X**	**X**									
Announcement distribution			**X**								
Intervention group				**X**	**X**						
Control group				**X**	**X**						
Data Analysis						**X**	**X**				
Manuscript preparation & abstract submission;								**X**	**X**	**X**	**X**

The Evaluation Purpose

The purpose of evaluating the Stress Reduction program is to determine if the program's goals and objectives are reflected in the actual activities and outcomes of the program. The evaluation will be valuable, because it will determine whether the program is successful in relieving the sensitive of stress in the disabilities' children parents that participate in the program and it will help indicate areas of the program that need to be improved or eliminated so that the stress Reduction program can meet its full potential.

The outcomes from an evaluation will help the Program Director and Program Coordinator in making well-informed decisions about potential program changes to help match the program activities with the program goals. The stakeholders that will gain from an evaluation of the Stress Reduction Program include parents of children with disabilities that attend the program, and the program administrators. In addition the parents will feel more confident that their children are benefiting from program attendance.

This evaluation proposal contains of an overview of the program and a brief clarification of the evaluation's focus. Moreover, it will encompass a description of the type and sources of data to be collected, the data collection instruments and timeframe, the analysis timeframe, and it will mention who will be performing those duties. This

proposal also will discuss the resources required and available, the probable budget, the evaluation methodology, and an explanation of the plan to preserve frequent communications during the evaluation.

The Description of Evaluation Program

The purpose of developing a concise program description is that it "provides a common understanding of the program for all the parties involved, permitting the evaluation to proceed with some consensus concerning the entity to be examined" (Fitzpatrick et al, 2011, p. 291).

Office of Special Education and Rehabilitative Services, Department of Education funded parent centers over 35 years ago, parent centers have helped parents set high expectations for their children with disabilities, and provided parents with the information and training they need to help their children meet those expectations. Parent centers, consistent with section 671(b) of IDEA, have successfully helped families: (a)Navigate systems that provide early intervention, special education, general education, postsecondary options, and related services; (b) understand the

Program Description				**Evaluation**	
Input	Activities	Outputs	Outcome	standers	Sources/Method

nature of their children's disabilities; (c)learn about their rights and responsibilities under IDEA; (d) expand their knowledge of evidence-based education practices to help their children succeed; (e) strengthen their collaboration with professionals; (f) locate resources available for themselves and their children, which connects them to their local communities; and (g) advocate for improved student achievement, increased graduation rates, and improved postsecondary outcomes for all children, including through participation in school reform activities. In addition, parent centers have helped youth with disabilities expect more from themselves, understand their rights and responsibilities, and learn self-advocacy skills. Parent centers have been valuable partners to Federal, State, and local agencies, providing expertise on how to serve families and youth effectively and efficiently.

The services that the Office of Special Education and Rehabilitative Services provides facilitating physical activities in relieving the sense of the stress which mostly comes from rising children with disabilities.

Evaluation Plan

The stress Reduction Program is going to be evaluated to define whether the program is successful in relieving the sense of stress of the parents that participate in the program. Logic model will used to evaluate the program as requested in the Office of Special Education and Rehabilitative Services (OSERS) . Logic Model can be used to support program staff articulate and deliberate their assumptions about how their program may attain its aims and what components are important to evaluate at any certain time ; in general to shape the capacity to reflect in an evaluative technique" (Fitzpatrick et al, 2011, p. 160).Table 1

Table 1: Logic Model for Stress Reduction Program

Program Description				**Evaluation**	
Input	Activities	Outputs	Outcome	standers	Sources/Method

Funding which is from OSERS Program Administrators and trainers who director and coordinate activities. Assistants who look after parents and provide instruction Parents Those need support and help. Facilities such as gym classroom ,Hyp fitness	Provide parents to the Hyp fitness to do the exercises. Provide parents with individualized sport assistance	Nearby 40 children disabilities parents Profits that can be utilized in other area .	Increased comfortable sensation for parents. Improved the performance in Yoga and Tai Chi exercises	Stress measurement score. Parents attendance the program in at least 80% .	Collect data from The program coordinators about the past and current results in stress measurement. Collect data about the program exercises attendances Collect date from trainers using questionnaires about in class participation during the exercises.

Data Collection and Analysis

An evaluation question is "Does the Stress Reduction program successfully relieve the sense of stress in parents of children with disabilities?" That question can be broken down into smaller components known as divergent questions. The evaluation will answer the following divergent questions:
1. Are the sense of stress of the participants' lower after regular participation in the program?
2. Are the participants attending at least 80% of the eight weeks Yoga and Tai Chi Classes?
Therefore, for each evaluation question, evaluators should identify the techniques that will be utilized to analyze the collected information. Using a matrix is an efficient method of establishing that information.

Evaluation Methodology

The evaluation will be applied over an eight weeks period. A tow-individual evaluation group with the support of 8 volunteer graduate students from relevant fields at Wayne State University will conduct the data gathering and analysis.
The majority of the required data is resulting from official Stress Reduction program outcomes records. The records analysis of those will take place directly once retrieval off-site and going to involve organizing the data into charts and tables. The schedule of data collection and analysis is outlined in table 2.
The outcomes will be existent spasmodically through individual conversations, emails, and scheduled temporary reports in prose and chart.
The observations will happen on-site over a period of eight weeks and will requisite the
cooperation of the Program Director, Program Coordinator, and program staff due to the nature of the method. After all of the observations are completed, the evaluation group going to analyze the data by comparing and contrasting the observation notes and then identifying the performance results which used during Yoga and Tai Chi Classes. After the analysis is complete, the results will be compiled and included in the written final report and personal debriefing.
In the beginning of the evaluation ,the evaluation group going to interview the Program Director, Program Coordinator, and all of the staff members of the OSERS to determine their views of the program. Since the population size is small, sampling will not be necessary. Throughout the evaluation, raw data about parents results in stress measurement will be collected.
The continuing observations throughout Yoga and Tai Chi Classes will occur for one hour every other week for each group over an eight weeks period. The time variance of the unannounced observations will give the evaluation staff a realistic sample of how the sessions are spent, without requiring daily observations over the entire period. Finally, after the second quarter ends, trainers will respond to questionnaires regarding parents participation changes in the program participants over the eight weeks period. Since the amount of parents per group is small, the trainers will report about each of the parents. Then, the evaluation staff will analyze all of the questionnaire responses to look for possible patterns.

Table 2: Data Sources, Collection Method, and Analysis Procedures.

Evaluation Question	Data Required	Data Source	Method for collecting data	Data Collection	Analysis Procedures
Does the Stress Reduction program success to relieve disabilities children parent the sense of stress? Are the senses of stress of the participants' lower after regular participation in the program? Are the participants attending at least 80% of the eight weeks Yoga and Tai Chi Classes?	Stress test scores before entry into the program. Stress test scores after entry into the program. Accounts of Parent participation	Stress Redaction Program coordinators Trainers and administrators	Official record collection Open-ended Observations Structured questionnaire administered by computer. Organizational document collection	Evaluation team and volunteer graduate students	Statistically organize the scores into charts and tables (3 weeks). Integrate scores after each report card (1 week each). Compare and contrast observations and then identify the different strategies and their assumed effects (3 weeks). Statistically organize Stress measure scores into charts and tables (1 week after each quarter. Review and organize the data collected from trainers by range of parent participation (3 weeks).

Communications Plan

Evaluators need to correspond frequently with decision makers and primary

Stakeholders throughout Evaluators need to communicate frequently with decision makers and primary stakeholders throughout an evaluation in order "to maximize the use of evaluation results by telling them what they are learning in the evaluation, getting their reactions, and learning what is surprising and what was expected. Then, at the end of the evaluation, the agency should share the evaluation results with a much broader audience than the immediately influenced stakeholders for the reason that other audiences might find unique uses for the raw data that was collected through the evaluation.

Once the evaluation is complete, the outcomes and conclusions will be communicated throughout a individual briefing and a visually appealing written final report. The individual briefing with the Program Director, the Program Coordinator, and the OSERS principals will consist of a PowerPoint presentation that includes a short summary of the results in addition to photographs of the program.

Conclusion

An evaluation for the Stress Reduction Program which is for the parents of children with disabilities will help determine whether the program is successful in reviling the sense of stress of the parents that participate in the program, and it will indicate areas of the
program that need to be improved or eliminated so that the program can meet its full potential.
The outcomes from the evaluation will aid the Program Director and Program Coordinator in making well-informed decisions about potential program changes to help match the program activities with the program goals.
Therefore, the advantages resulting from an developed program far outweigh the monetary costs of an evaluation.

References

Abbeduto, L., Seltzer, M.M., Shattuck, P.T**.,** (2004). Psychological well-being and coping in mothers of youths with autism, Down syndrome, or fragile x syndrome. *Journal on Mental Retardation*, *109*(3), 237-254. doi:10.1352/0895

Fitzpatrick, J.L., Sanders, J.R., & Worthen, B.R. (2011). *Program Evaluation: Alternative Approaches and Practical Guidelines*, 4th edition. Upper Saddle River, NJ: Pearson

Wolf, L. C., Noh, S., Fisman, S. N., & Speechley, M. (1989). Brief report: Psychological effects of parenting stress on parents of autistic children. *Journal of Autism and Developmental Disorders, 19,* (1), 157-166.

HUMAN RIGHTS AS A SOURCE OF ADMINISTRATIVE LAW

NARINE BABAYAN

Republic of Armenia
Attorney at Law (License N 2013)
Tel: +374 77 327783
Address: 85 Kristapor street, Yerevan, 0018, Armenia

PRINCIPLES: DUE PROCESS

Due process rights are accepted by all common law systems[1] and receive recognition in many others[2]. We should not, however, make the mistake of thinking either that this makes the principles 'universal' or that they take the same shape or have the same scope in every legal system. The ECJ, for example, once surveyed national procedures in competition decisions, where due process rights are widely recognized; they were, however, shown to diverge very greatly and this at a time when the EU 'club' contained relatively few legal orders. Again, the attributes of procedural justice have been said to center on impartiality, the provision of a hearing and a reasoned decision[3].Yet, whereas English law protects the right to a hearing relatively strongly, the right of access to a court, although it has been described as constitutional[4], can be ousted by parliamentary legislation. Again, English law does not recognize a general administrative duty to give reasons, though most administrative lawyers believe that it should[5]. As the EC Treaties do contain an obligation for decisions to be reasoned, the ECJ has held that the requirement must be imported into national administrative systems in cases involving EC law[6]. Similarly, in French administrative law, the chief concern is legality and the focus on the 'rights of the defense'; thus, in administrative proceedings, where penalties are not involved, due process rights may not be available. The ECJ has, however, now adopted and constitutionalized the access principle in the leading case of Johnston[7], where it held that EC law did not permit the jurisdiction of the courts to be ousted by a preclusive clause in national legislation, where EC law is involved, while France had to give way to EC law in Heylens[8], a case that established (i) the general principle of effective judicial protection in administrative proceedings, and (ii) a duty to inform parties to an administrative decision of the reasons for that decision. In this way, the constitutionalization of basic administrative procedures as 'general principles of EC law' allowed them to be diffused through national administrations, at least in situations involving EC law, providing the opportunity, not always taken, for 'levelling up' of national law[9]. Perhaps, as Prosper Weil has argued, a principle that can result in French public administration treating the subject 'as a supplicant to whom one accords or refuses to accord a favor'[10], is unduly restrictive; perhaps it does not measure up to modern requirements; perhaps

[1] Due process rights have their origin in criminal procedure, as the French term, les droits de la défense, reveals. In this guise they have a long pedigree, stretching back in Anglo-American culture to Magna Carta through Amendments V, VI, and XIV of the US Constitution.
[2] See for a global survey S. Guinchard et al., Droit processuel, Droit commun et droit compare du procès (3rd edn., 2005).
[3] M. Bayles, Procedural Justice: Allocating to Individuals (1990).
[4] R v Lord Chancellor ex p Witham [1997] 2 All ER 779, at 783–784.
[5] See the Report of the Committee of the unofficial JUSTICE/All Souls Review of Administrative Law in the United Kingdom, Administrative Justice - Some Necessary Reforms (1988), at 71. And see Richardson, 'The Duty to Give Reasons: Potential and Practice' [1986] Public Law 437.
[6] Case 222/86 UNECTEF v Heylens [1987] ECR 4097. The duty to give reasons is imposed by the EC Treaty in TEC Art. 253 (ex 190).
[7] Case 222/84 Johnston v Royal Ulster Constabulary [1986] ECR 1651.
[8] Heylens, supra note 6.
[9] Anthony, 'Community Law and the Development of UK Administrative Law: Delimiting the "Spill-Over" Effect', 4 European Public Law (1998) 253.
[10] P. Weil, Le Droit Administratif (1973), at 80 (author's free translation).

it does not pay sufficient respect to good governance values of participation and transparency; perhaps benign 'levelling up' may be warranted. But we should not jump too quickly to this conclusion. Cultural uniformity is not an unconditional good. 'It is not because an institution or rule is to be found only in one, or in a small number of countries, that it is to be adjudged bad; the majority is not always right.'[11] And where did EC law find its own due process standards, to which France must now conform? In essence they are common law standards, imported by the ECJ, allegedly in response to protests from multinational enterprises, threatening non-compliance with EC competition law and voiced through the UK Government[12]. Moreover, the ECJ has itself come into conflict with the views of the Court of Human Rights in jurisprudence involving Commission practices in competition cases[13].

In the present era of human rights supremacy, the best way to constitutionalize due process values or present them as 'universal' is in the guise of human rights[14]. To pin them more securely into the human rights pantheon, a 'dignitary' explanation is often put forward in justification of due process rights. So Lawrence Tribe insists on the 'intrinsic value in the due process right to be heard, since it grants to the individual or groups against whom government decisions operate the chance to participate in the processes by which those decision are made, an opportunity that expresses their dignity as persons'[15]. From this standpoint, due process rights are accepted as valuable and even essential, regardless of their effect on outcome[16]. It is in fact standard practice for modern bills of rights to contain due process provisions, giving them constitutional status as in Amendment XIV to the American Constitution. Due process rights, reflecting classical rule of law preoccupations with equality before the law; the non-retrospectivity principle; an impartial or independent judge; and fair trial; have found their way too into modern human rights texts. Article 10 of the 1948 Universal Declaration of Human Rights[17] was replicated in ECHR Articles 5 and 6(1). The latter, which provides for 'a fair and public hearing within a reasonable time by an independent and impartial tribunal' in any case involving a determination of a person's 'civil rights and obligations' has proved particularly influential in the field of administrative law.

But as due process rights have found a place in human rights texts, their ambit has widened steadily. In Europe, by the 1990s, their tentacles had spread far enough into administrative justice to amount to a 'developing human right'[18]. Article 6(1) has generated an expansive jurisprudence, which has bitten deeply into national systems of administrative law as the concept of 'civil rights and obligations' has moved into the field of welfare and even touched taxation[19]. In its name, for example, established and effective land use planning systems have been attacked across Europe, in the hope of transferring planning decisions to an independent judge[20]. The latest human rights texts take the process still further, adding a 'fourth generation' of human rights. These, which take the shape of 'principles of good administration', cover the central ground of modern administrative law[21]. Thus Article 41 of Chapter V of the EU Charter of Fundamental Freedoms seemingly extends classical due process rights dramatically, upholding 'the right of every person to be heard, before any individual measure which would affect him or her adversely is taken'. And the article goes further still, guaranteeing to the European citizen the 'right to have his or

[11] Abraham, 'Les principes généraux de la protection juridictionnelle administrative en Europe: L'influence des jurisprudences européennes', 9 European Public L Rev (1997) 577, at 582 (author's translation).

[12] Case 17/74 Transocean Marine Paint v Commission [1974] ECR 1063. See generally H.-P. Nehl, Principles of Administrative Procedure in EC Law (1998).

[13] The divergent case law of the two courts is noted by Sherlock at (1993) 18 EL Rev 465.

[14] Gunichard et al., supra note 81, at 59–87.

[15] L. Tribe, American Constitutional Law (1988), at 666. See also Mashaw, 'Dignitary Process: A Political Psychology of Liberal Democratic Citizenship', 39 U Florida L Rev (1987) 433.

[16] Richardson, 'The Legal Regulation of Process' in G. Richardson and H. Genn (eds), Administrative Law and Government Action (1994), at 114.

[17] Art 10 provides: 'Everyone is entitled in full equality to a fair and public hearing by an independent and impartial tribunal, in the determination of his rights and obligations and of any criminal charge against him.'

[18] Bradley, 'Administrative Justice: A Developing Human Right?', 1 European Public Law (1995) 347.

[19] See generally Hickman, 'The "Uncertain Shadow": Throwing Light on the Right to a Court under Article 6(1) ECHR' [2004] Public Law 122.

[20] Bryan v UK (1996) 21 EHRR 342; Zumtobel v Austria (1994) 17 EHRR 116.

[21] Kanska, 'Towards Administrative Human Rights in the EU: Impact of the Charter of Fundamental Rights', 10 ELJ (2004) 296.

her affairs handled impartially, fairly and within a reasonable time'. This is a questionable development; it seems to elevate to the level of fundamental freedoms a bureaucratic failure to answer a letter.

From a secure basis in human rights texts, it is a short step to claim universality for due process standards in the name of human rights. The next step is to move due process rights on to a higher plane by claiming them as principles of a universal constitutional law. Perhaps, as comparative constitutionalists hope, we are experiencing a 'timeless legal convergence, systematizing broadly across cultures and world history'[22]; perhaps convergence is 'limited to international human rights, which one might characterize as the law of humanity'[23]; perhaps we can agree a core Bill of Criminal Procedure Rights, accepted internationally. The idea has, however, certainly received a setback in a recent European judgment. Decisions of the UN Sanctions Committee, a body responsible for 'listing' persons and bodies thought to be engaged with terrorism, with a view to freezing their assets, were attacked in the Court of First Instance. Giving the lie to the idea of these due process norms as universal, the Court refused to intervene on procedural grounds[24].

[22] N. Dorsen et al., Comparative Constitutionalism: Cases and Materials (2003), at 10. See also Ackerman, 'The Rise of World Constitutionalism', 83 Virginia L Rev (1996) 771; Guinchard et al., supra note 81

[23] Teitel, 'New Approaches to Comparative Law: Comparativism and International Governance', 117 Harv L Rev (2004) 2570, at 2593, a critical review of Dorsen et al

[24] Cases T–306/01 and T–315/01 Ahmed Ali Yusuf and Al Barakaat International Foundation and Yassin Abdullah Kadi v Council and Commission, 21 Sept. 2005, not yet reported, Press Release No. 79/05.

THE FOOD MANAGEMENT STUDY FOR ENVIRONMENT

PATHAWIT CHONGSERMSIRISAKUL
Faculty of Food Business Management,
Panyapiwat Institute of Management, Nonthaburi, Thailand
Email: *pathawit_C@hotmail.com*

ABSTRACT

The content of the practical subject, which the university has designed by the specific curricular in food business management faculty of the private university in Thailand. The curriculum has been applied for environmental concerning together with food business operation for teaching and develops the undergraduate students in the university to gain this knowledge and be useful in their work in the future after graduated.

By the knowledge management of theory and practice of skills development of business, agricultural and environmental in technique. And evaluation by researches to conduct study the efficiency of the project by qualitative and quantitative of research methods were employed by SPSS program, the result was in level with significant to believe that this concept has efficiency for teaching the students in food business management for skills development in business together with the environment concerned in the same time.

Keywords: Food Management Study, Food Business Subject, Environment Study, Agricultural Study, The Media Technology for Food Business Management Student.

Introduction

The Food Management Study for Environment, is the content of the practical subject, which the university has designed by the specific curricular in food business management faculty of the private university in Thailand. Which are provide the curricular to support the student skills to deliver the knowledge and be friendly for the environment (Pathawit Chongsermsirisakul, 2018, Geneva, Switzerland) as the core contents of the subject for the vocational development of undergraduate students to achieve their skill development in their future career. Not only is it to develop the student's abilities for their future to meet their own careers, but also to promote the environment awareness in the same time. (*Pathawit Chongsermsirisakul*, 2018, Hong Kong, China)

According to the environments has been destroyed by natural disasters and humans. It's made the cause serious to the weather consequences such climate changed. And to the food resource such as soil, water, rain which are the base of the planting cultivation have problem occurred to both environment and the humans. (Pathawit Chongsermsirisakul, 2018, FAO, Rome, Italy)

Therefore, the food business management of the university in Thailand has realized of the environment preservation problem. (Pathawit Chongsermsirisakul, 2018, Hong Kong, China)

As a result, the curriculum has been applied within the content of food business management, for environmental impact concerning together with food business operation. The context for teaching and the contents has applied into the cartoon animation (Siripen Iamurai, 2009), which proposed to develop the undergraduate students in the university to gain this knowledge and be useful in their work in the future after graduated.

Objective Of The Research

1. To conduct study that the efficiency of the project.
2. For seeking the possibility to use the curricular to be the tool of teaching for the vocational student in work-based education
3. Use data information to find the model of learning that will be matched the learning tools and persuade efficiency for learners of food business management for environment student.

Conceptual Framework

There is the consisting of the theories and practices of Food Business Management studies concepts and Environment studies concepts to achieve the conduct studied.

Figure 1**:** Conceptual Framework

Each outcome is described in terms of key concepts, knowledge and skills of learner have been gained from the studies.

Theoretical Framework

Based on the content of our 3 Researches and 1 Journals as:

Food Business Management Theory

Theories of food business management functional, which are relating to the environment. Focus on food resource management in the basic, how to get a safe cooking ingredient, both the main ingredient and other ingredients for cooking. Till the business operation functions to survive in the food business market place for economic growth.

Figure 2: Theoretical Frameworks

Based on the research of The Bakery Loop for Tomorrow, the Work-based Education Strategy for Education Equality (Pathawit Chongsermsirisakul, Hong Kong,2018) and the Journal of Eco Bakery for Friendly Environments in Ecological-Case Study from Thailand. (Pathawit Chongsermsirisakul, Harvard University, USA, 2017)

Environment studies Theories:

Theories of all environment concerned to the food business management such as the basis of soil, water and air, the main function for planting, cooking and wasted management of food business. The study of preservation and protection the various aspects of Biological, Physical and solving the agroecosystems to maintain all physical, biodiversity and chemical qualifications for food planting in agricultural and climate changes impacts.

Based on the researches and journal as:

The journal for water preservation

The research for soil protection

The research for soil protection

Figure 3: Based theoretical Frameworks

The journal of Eco Bakery for Friendly Environments in Ecological-Case Study from Thailand. (Pathawit Chongsermsirisakul, Harvard University, USA, 2017)

The research of The Issue of Soil Pollution Solved Using Organic Farming (Pathawit Chongsermsirisakul, FAO, Rome, Italy 2018)

Cartoon Animation tools for studies Theories:

Theories of how to use the cartoon animation to be the tools for study in format of educational technology. The cartoon animation, of which had designed by the specific conceptual to be the tools approach to create the positive learning behavior of student by the treatment. The students have improved their self-learning skills as had fun while learning through this educational cartoon animation(Siripen Iamurai,2009)

Research Methodology

This study utilizes quantitative methods. After the test experiment, all the data were verified; after the experimental that fits the pre-test post-test model is conducted.

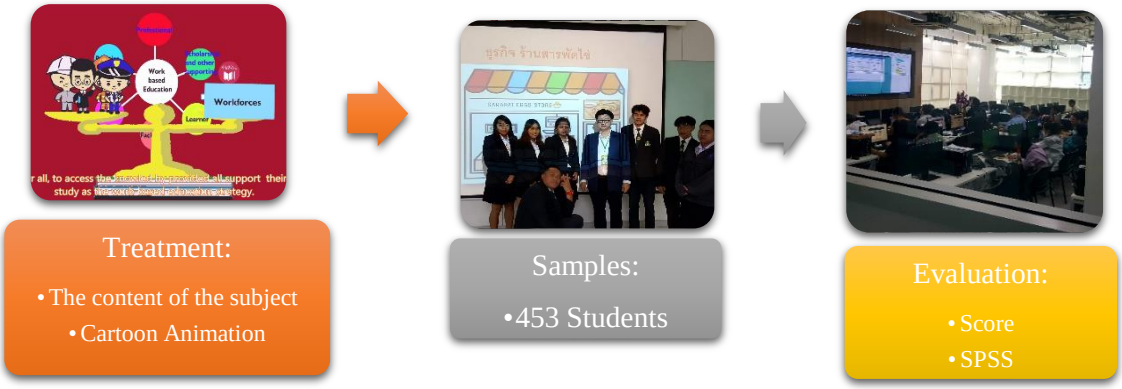


Figure 4: Research Framework

Study Group

The sample consists of 453 students (N=453), who are enrolled in a university of Thailand by randomize selected.

Treatments:

We select the content of the subject and the cartoon animations for the research for soil protection, "Cultivation of food crops for the soil prevention, the food management in agricultural for environment is the name of the cartoon animation, which is the treatment.

The story of food plant cultivation in terrace planting technique for the soil erosion solving. The Lemon grass, of which has many useful qualifications, has to be the key of achievement for planting to produce safety food and environment solving problem (Soil Erosion in slope area).

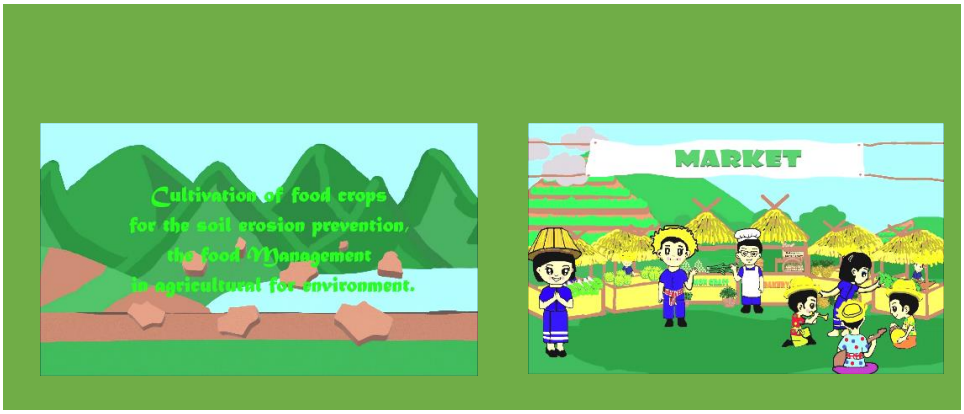


Figure 5: The treatments

Research Tools

It tests the difference between examination scores of students in experimental groups compared between pre-test and post-test score.

Data and statistical analysis

Data analyzed by using a SPSS statistical program where t test is applied in determining the significance of the difference between pre-test and post-test, means and SD values with limits tolerance false 5%. We selected only the eligible for participation that complete all examinations (453) and failure incomplete (29).

The Result Of Research

It is presented below the findings gained by the search were analyzed by It is presented below.

One -Sample Statistics

	N	Mean		Std. Deviation
	Statistic	Statistic	Std. Error	Statistic
Pretest	453	0.93	0.01	0.25
Posttest	453	0.92	0.01	0.26
Valid N (list wise)	453			

	95% Confidence Interval of the Difference			
	t	Mean Difference	Lower	Upper
Pretest	78.44	0.93	0.90	0.95
Posttest	75.84	0.92	0.90	0.95

Table 1: the findings gained by examination score defined.

Significant $\alpha = 0.05\%$ or 95%, $Z = 0.92$, and critical $t<0.90$ to $t> 0.92$

Refuse Null hypothesis, accept Research hypothesis at level of significance 0.05. The project has efficiency (94.0%) is more than not efficiency (6.3%)

Results Of All Researches

The results of the research are accepted the hypothesis at level with significance in target in the research experimental. There was a statistically significant difference between pretest and posttest in the treatment of the knowledge in relationship to the material presented. Students can gain the knowledge easily understanding, it was supported teaching by fun and easier remembered and better understand the contents of project.

Conclusion

Significant result has been found. We believe that The Food Management Study for Environment project has the efficiency in practice the skills of professional development in food business for environment. It's the efficiency

References

Pathawit Chongsermsirisakul, Eco Bakery for Friendly Environments in Ecological-Case Study from Thailand, The Online Journal of Science and Technology-July 2018, Volume 8, Issue 3, p.
43-48

Pathawit Chongsermsirisakul, The Issue of Soil Pollution Solved Using Organic Farming, The proceeding of the International Conference of Soil Solution, FAO, Rome, Italy, 2018

Pathawit Chongsermsirisakul, The Bakery Loop for Tomorrow, the Work-based Education Strategy for Education Equality, HKERA International Conference 2018, https://www.hkier.cuhk.edu.hk › hkera_schedule, Hong Kong, 2018

Pathawit Chongsermsirisakul, the issue of soil pollution solved using organic farming: a case study from Thailand, The electronic proceeding, the international conference of Rights of Nature for Peace and Sustainable Development, Geneva Forum 2018, www.osi-genevaforum.org › Rights-of-Nature-for-Peace-and-Development, United Nations, Geneva 2018

Siripen Iamurai, Positive Cartoon Animation to change children in primary school, eproceddings, the international conference of education 2009, https://www.eduhk.hk › primaryed › eproceedings › fullpaper, Hong Kong, China 2009

HOW THE CONSTITUTION AND THE LAWS OF TWELVE TABLES OF THE ROMAN REPUBLIC INFLUENCED THE U.S. CONSTITUTION AND THE BILL RIGHTS

PELLEGRINO MANFRA PH.D.
City University New York
pmanfra@qcc.cuny.edu

ABSTRACT

The Republican Roman Constitution was an adaptable, unwritten set of historical guidelines and precedents based upon a system of checks and balances and the separation of powers that served the Republican Roman government as it transitioned from a monarchy, to a republic, and ultimately an empire. As a historical tradition, rather than a written document, the Republican Roman Constitution helped the Romans establish institutions and offices, formalize the rights of citizens, and process laws for more than 1200 years Historical precedents were implemented by the different branches of government and their officials, including consuls or magistrates, legislative assemblies, and senators. The US Constitution is a formal, written document that established the parameters of our three branches of government that borrowed its structure from ancient Rome.

The legal history of Rome begins properly with the Twelve Tables. It is the first and most ancient Roman code collecting the earliest known laws of the Roman people and forming the foundation of the whole fabric of Roman Law. The US Constitution established the parameters of our three branches of government that borrowed its structure from the constitution of Roman Rebublic. Thus Roman Law and the Twelve Tables would become a blueprint and structure for the US Constitution and the Bill Rights.

The Twelve Tables was a set of laws inscribed on 12 bronze tablets created in ancient Rome in 451 BCE. They were the beginning of a new approach to laws where they would be passed by government and written down so that all citizens might be treated equally before them. The Twelve Tables were regarded as a great legal charter and it was a first step which would allow the protection of the rights of all citizens and permit wrongs to be redressed through precisely-worded written laws known to everybody. Consequently, the Roman approach to law would later become the model for our founding fathers in writing the US constitution. The Twelve Tables was a list of laws covering most areas of private law & concentrating on relations between individual citizens. The list of laws seems to have covered most areas of private law and concentrated on relations between individuals (as opposed to individuals vs. the state or the rights of non-citizens) and thus is more a list of civil rights.

The Twelve Tables of Roman law is similar to the United States Constitution because both are binding on all citizens and lay down the law of the land. There is strong evidence that the Republican Roman Twelve Tables influenced the writing of the Constitution because many connections can be drawn between both of the documents. A law which was prevalent in Ancient Roman society and Modern Day United States society, is the law stating that everyone is treated equal under the law, and a person is innocent until proven guilty. The law located on Table 1 which can be interpreted as this is, "There shall be the same right, for a staunch person and for a person restored to allegiance, of bond and conveyance with the Roman people."

The Twelve Tables were very simply much like the American Constitution and Bill of Rights, they were a codified and listed set of rules citizens had to follow, and limits on the powers the government had over them

This presentation examines and analyses the impact and influence that Roman

Republic Laws and the Twelve Tables had on the US Constitution and the Bill rights.

THE UTILIZATION OF A CROSS-PLATFORM MESSAGING APP AS SUPPORTIVE TECHNOLOGY IN TEACHING AND LEARNING

PINN TSIN ISABEL YEE

Monash University Foundation Year
Sunway College, Bandar Sunway
Selangor 47500, Malaysia.
isabely@sunway.edu.my

ABSTRACT

With the advent of internet technologies, students are increasingly turning towards social media and cross-platform messaging apps such as Whatsapp, Line and WeChat to support their teaching and learning processes. Although each messaging app has varying features, Whatsapp remains one of the most popular cross-platform apps that allow for fast, simple, secure messaging and free calls anytime, anywhere. With a plethora of advantages, students could easily assimilate Whatsapp as a supportive technology in their learning process. There could be peer to peer learning and a teacher will be able to share knowledge digitally via the creation of Whatsapp Groups. Content analysis techniques were utilized to analyze data collected by closed-ended question forms. Studies demonstrated that 98.8% of college students from the Monash University Foundation Year agreed that the employment of Whatsapp Groups was helpful as a learning tool. Approximately 71.3% disagreed that notifications and alerts from the Whatsapp Group was a disruption in their studies. Students commented that they could silence the notifications and hence, it would not disturb their flow of thoughts. In fact, an overwhelming majority of students (95.0%) found it enjoyable to participate in Whatsapp Groups for educational purposes. It was a common perception that some students felt pressured to post a reply in such groups, but data analysis showed that 72.5% of students did not feel pressured to comment or reply. It was good that 93.8% of students felt that it was alright if their posts were not responded to speedily, but was eventually attended to. Generally, 97.5% of students found it useful if their teachers provided their handphone numbers to be added to a Whatsapp Group. If a teacher posts an explanation or a mathematical working in the Group, all students would be able to view the post together, as opposed to individual students asking their teacher a similar question. On whether students preferred using Facebook as a learning tool, there was a 50:50 divide in the replies from the respondents as 51.3% of students liked Whatsapp, while 48.8% preferred Facebook as a supportive technology. Overall, the utilization of Whatsapp Groups as a supportive technology in teaching and learning should be implemented in all classes to continuously engage our Generation Y students in the ever-changing digital landscape.

Keywords Education, Learning, Cross-Platform, Messaging App, Technology, Whatsapp Groups.

THE TECHNICAL AND PEDAGOGICAL DIFFICULTIES WITH ARTIFICIAL INTELLIGENCE (AI) IN EDUCATION

SHORIF MOLLAH
Ph.D. Student
Department: Educational Technology
Beijing Normal University
No. 19 Xinjiekouwai Street, Haidian-100875, Beijing, China
shorifmollah@gmail.com

ABSTRACT

The use of artificially intelligent technology shows enormous impacts on the pedagogical context today. It is one of the most cutting-edge hardware and software resources, which is developed with multiple types of astonishing features. Education scientists hope strongly to utilize this powerful technology to redesign, reshape, and to revolutionize the educational model for future schooling. They are very optimistic about applying artificial intelligence (AI) in almost all the levels of educational platforms such as online or offline. Artificially intelligent technology is being used in the significant three stages that are in the teaching-learning activities, assessment, and administration. Many of the projects, research, and studies are ongoing to exploit the strength of AI in education. This study looked at the difficulties that the educators face to exploit the AI technologies in the educational domain. Though it has shown numerous types of advantages in the educational practice already; however, this technology faces some of the severe issues to be considered as an examined, valid, and verified tool in the educational usages. It needs to be tested and verified theoretically, pedagogically, and practically. This review article conducted desktop analysis, content analysis, document analysis, and studied the literature from different corners of the pedagogical and technical aspects to find out the most vigorous drawbacks which the educationists face while applying AI technologies in educational practice until now. The study found some of the difficulties with AI that are the most frequently faced problems with AI in the educational domain. Those problems include privacy leakage problem of personal data, coding biasedness in tools, students' engagement and interaction, miscommunications, knowledge gap, and cultural clash, affected behavioral patterns, and incompatibility to classroom communication, et cetera.

Keywords: Artificial Intelligence, Machine learning, Intelligent Tutoring System, Chatbot, Learning Analytics.

EFFECTS OF AUGMENTED REALITY TECHNOLOGY AND LEARNING STYLES ON STUDENTS' CLAY SCULPTURE COURSES LEARNING ACHIEVEMENTS

WEILONG WU YEN HSU, JIANGJIE CHEN
The Graduate Institute of Design Science, Tatung University
No.40, Sec. 3, Zhongshan N. Rd.
Taipei City, Taiwan
21710632@qq.com

ABSTRACT

With the development of technology, the application of technology in teaching has become a common phenomenon. The use of appropriate technology in the classroom will improve the teacher's performance and the learning performance of students. Among them, the development of augmented reality (AR) technology has brought great changes to the sculpture courses. On the other hand, the students' learning styles are individualized. Teachers can teach the students according to their different learning styles, which is more helpful for the learning achievements. Therefore, this research attempts to use the AR technology teaching method and learning styles as independent variables to explore the effects of AR technology teaching method on the clay sculpture courses, and analyze the differences among learning styles of students in traditional teaching method and AR technology teaching method. In this research, 39 students (11 male and 28 female students) in a sculpture department of a university in southeastern China were selected for experimental design. The experimental group students carried out the clay sculpture practice with AR technology teaching method, while the control group students conducted traditional teaching method. They all performed pre-tests on the learning styles of VAK (Visual, Auditory, and Kinesthetic Learning Styles) to identify which type of learning style they are. The experimental results show that compared with traditional teaching, the AR technology teaching method significantly improves the students' learning achivements, and in different learning styles, the visual and kinesthetic students' performance is better than the auditory students.

Keywords: Teaching Methods, Augmented Reality, Learning Styles, Learning Achievements.

ANXIETY AND DEPRESSION OF MOTHERS REARING CHILDREN WITH DEVELOPMENTAL DISORDERS

ZLATOMIRA KOSTOVA
PhD, Department of Psychology, Plovdiv University, Bulgaria

ABSTRACT

The subjective experience of trauma caused from loss of health leads to the suffering pain as an emotional state. That is the case with a group of mothers rearing a child with developmental disorders. The aim of the presented study was to describe specific trends in personality function from the general symptomatic profile of the mothers having children with developmental disorders. Mechanisms of health loss traumatic experience of the focus group are presented. Mothers revealed feelings of sadness, guilt, shame and anger directed at themselves that were specific to depression accompanied by the experience of grief. Aaron Beck's model of anxiety and depression was applied. Cognitive evaluation of the traumatic situation was considered to be a leading factor for post traumatic adaptation. Traumatic experience cognitive awareness gave mothers prospects for achieving symptomatic relief and was raising their hope for the future of the child in the family context. SCL-90-R method was used in the study.

ROME, ITALY
19-21 NOVEMBER
2019