

EFFECT OF GLOGSTER AND COOPERATIVE LEARNING DIFFERENTIATED INSTRUCTION ON TEACHERS' PERCEPTIONS

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Abstract

The present study investigated the effectiveness of the Glogster and cooperative learning as differentiation models of English as a second/foreign language (ESL/EFL) and Science projects. The study employed a mixed method study design whereby questionnaire and open-ended interview were incorporated to elicit the required data. Eighteen teachers along with eighteen intact classes (n=374) of grade 8 learners of English as a foreign language were randomly assigned to control and experimental conditions. The researchers collected open-ended data with the intent of understanding the meaning Science and English teachers have constructed and how they perceived differentiated instruction upon using the Glogster and cooperative learning in conducting and presenting projects. The findings proved that utilizing Glogster and cooperative learning as multifeatured model could improve students' English and Science projects and enhance Science and English language teachers' perceptions of differentiated instruction.

Keywords: Active learning; cooperative learning; differentiated instruction; Glogster; ICT

1. Introduction

The Ministry of Education and Higher Education in Lebanon set the framework of Lebanon's Education Reform Strategy and Action Plan (LERSAP) in 2011 with the integration of ICT as the main vehicle which could provide learners with the dispositions, competencies, and skills to succeed in digital world (Awada & Diab, 2016). The LERSAP stipulated that curriculum reform should be achieved to build up a human capital characterized by creative and cognitive skills. The LERSAP mainstreamed for the technical infrastructure, content-based curriculum, instruction and assessment that could form educational reform set by the Ministry of Education and Higher Education (MEHE). The educational reform and the digital age initiation were launched in 2011 to meet the educational policies implemented worldwide and

would help teachers meet the standards and equip them with professional development needed to ensure that the teachers could mirror the success of the vision outlined in the LERSAP. The study is premised on the proposition that ESL/EFL and science skills are vital for communicative and academic functions, which creates a need for differentiating projects by form and process using Information Communication Technology (ICT) models and cooperative learning strategies. The setting and the context of the present study necessitated the investigation of an innovative differentiated instruction model that could bridge the disparity between the Lebanese curriculum and the poor textbook activities that aren't tailored to serve the needs of students with different learning profiles, readiness, and interests.

Differentiated instructional approach improves achievement and makes students engaged in deep thinking. It enables teachers to provide the different needed learning environments to the students of varied learning profiles and interests and makes them involved in meaningful, motivating tasks (Tomlinson and McTighe, 2006; Bailey and Williams-Black, 2008). Tomlinson and Imbeau (2012) also found that when teachers took the time to differentiate instruction, achievement increased as the assignments were tiered to meet the instructional levels of each student. As such, differentiated instruction (DI) might be defined as an effective strategy to meet the needs of diverse learners. Differentiation involves having multiple ways to structure a task so that each student is provided with an opportunity to perform at an acceptable level of difficulty (Woolley, 2008). Differentiated instruction promotes the various types of cognitive domain lower-order and higher-order critical thinking skills. Teachers teaching students with low socioeconomic status incline to employ a more traditional approach to teaching than teachers working with students of high socioeconomic status (Block, Paris, Reed, Whiteley, and Cleveland, 2009; Woolley, 2008). Traditional teaching has been limited to a small set of skills in which teachers raise questions, give instructions, assign homework, control seatwork, appraise assignments, administer tests, assign and review homework, resolve disputes, punish nonconformity, grade papers, and give grades (Haberman, 1995).

Cooperative learning also results in higher achievement at several grade levels and in diverse Subject matters than the traditional whole-class teaching (Johnson and Johnson, 1985; Johnson and Johnson, 1995; Slavin, 1991). Cooperative learning improves peer interaction, increases motivation, and changes perceptions of learning, school, and subject (Johnson and Johnson, 2002; Sharan, 1980; Slavin, 1991, 1995). Furthermore, cooperative learning activities improve achievement scores (Slavin, 1991, 1995; Sharan & Shaulov, 1990). Group Investigation, a cooperative learning method and a flexible learning strategy, can provide

students with various inquiry experiences whereby the classroom turns into an “inquiring community” and each student is an investigator who organizes inquiry with the class’s general topic investigation (Kagan, 1985; Sharan & Sharan, 1994).

With the structure and features of Glogster, students experience intrinsic motivation to pursue their project. The Glogster tool encourages students to collect information and to present their findings (McCoy, 2014). Technology seems to improve the students’ perceptions of project presentations and teachers’ perceptions of differentiated projects (Cutter, 2015). As such, the Glogster model facilitates student-centered learning whereby the teacher employs minimal whole class instruction to present the general topic of investigation and to provide guidelines to help students carry out their investigations. The Glogster model seems to be an appropriate teaching strategy to differentiate the content, process, and product of the oral presentations of students who employ the model to conduct their projects as well.

Consequently, the purpose of the present study is to investigate the relative effectiveness of Glogster and cooperative learning as differentiation models of EFL and Science projects in comparison with regular instructional practices that are based on the pedagogical implications of the 1997 Lebanese curriculum which doesn’t emphasize differentiation as a means to increase achievement. Another purpose is to investigate the effectiveness of the Glogster and cooperative learning as form and process differentiation models in improving the perceptions of Science and English teachers of employing differentiated instruction in their classrooms at 8 public schools in Lebanon. A basic assumption behind the study is that independent research into the relative effectiveness of the Glogster and cooperative learning as form and process differentiation models in EFL and Science contexts is presently scanty or non-existent.

The purpose of this qualitative case study was to investigate the effectiveness of Glogster and cooperative learning models as a multi-featured strategy in improving the perceptions of Science and English teachers of EFL eighth graders of differentiated instruction implemented in conducting and presenting projects at 5 low performing public schools located in Beirut, the capital of Lebanon. This purpose of the study is to investigate the effectiveness of the Glogster and cooperative learning in increasing students’ achievement and helping teachers to differentiate and scaffold instruction successfully.

Specifically, the present study addressed the following questions:

1. Is Glogster and cooperative learning differentiated instruction more effective than regular EFL instruction in improving science and English projects of EFL eighth graders?

2. Is Glogster and cooperative learning differentiated instruction effective in improving Science teachers' and English teachers' perceptions of differentiated instruction at public schools?

2. Theoretical framework

The theoretical underpinnings of the study relate to Vygotsky's (1978) zone of proximal development theory (ZPD) and Tomlinson's theory of differentiated instruction (Tomlinson, 2008). ZPD suggests that when a difficult task is assigned to students, frustration takes place and there is no learning, and when the assigned task is too easy for students, the brain won't be challenged; thus, learning won't take place as well. The ZPD is the difference between the learner's ability to solve problems alone and the potential that a learner might attain with the help of a teacher or a more knowledgeable peer in a good learning environment. The teacher must provide students with mediation or scaffolds beyond independent learning yet within their zone of proximal development (Gredler, 2012). The scaffolds are directly linked to the individual personal needs. In scaffolding, the task itself remains the same, yet the level of assistance provided to the learner changes. Assessment in the ZPD should align with the student's cognitive awareness and potential to analyze, synthesize and compare and concepts (Gredler, 2012).

Differentiated Instruction forms another framework of the present study. Differentiated instruction should meet the needs of all learners. Tomlinson (2008) indicates that students increase and build knowledge and then employ the new skills to build even more skills. As such, the teachers must address four definite elements: students, learning environment, content, and instruction. Should any of the four elements be ignored, the quality of learning will be diminished (Tomlinson, 2008). Differentiation includes instructional tiered assignments, cooperative learning, jigsaw activities, interest centers and group investigations (Tomlinson and McTighe, 2006). The effective classroom instruction demands having the teachers design the curriculum which should promote student understanding and skills to be learned while meeting the benchmark and standards required (Dean, Stone, Hubbell, and Pitler, 2012). Therefore, the use of differentiation in the classroom makes teachers able to bridge the achievement gap (Tomlinson, 2008). Teachers should implement several instructional tiered assignments as they differentiate the product and enable students to choose different products to reflect the learned content (Palinscar, 2012). Tiered instruction improves academic achievement of learners at all grade levels in all subjects. By employing the flexible

grouping model, teachers can use a variety of grouping patterns to improve student learning (Optiz, 1999).

The integration of technology into the classroom improves differentiation and enhances learning (Cutter, 2015). Glogster, a Web 2.0 tool used to create a glog which is an interactive platform in which users create an online poster containing text, video, images, and graphics, can be used easily by students of different ages and learning profiles. Glogster has 16 key features which provide diverse ways of collaboration (Jensen & Tunon, 2012). It strengthens the students' inquiry skills, communication opportunities, and curriculum awareness of academic tasks. When used effectively, the Glogster model reinforces a great sense of collaboration among the small groups and in the whole class (McCoy, 2014). The use of the Glogster tool enhances motivation and collaboration among learners (Martinez-Alba et al., 2014). Educators can use Glogster to engage distance students to collaborate with other students to create and present their project. The Glogster project could be successfully implemented in two Mathematics classes in a middle school, and students created their glogs after they had determined the content and created the design; students reported that they tremendously enjoyed the collaboration, multimedia, colors and videos. Significant effectiveness of Glogster was reported in achieving learning outcomes and improved perceptions of learning were observed (McCoy, 2014).

3. The study

3.1. Aims and design

The study employed a mixed-method design whereby the data including interviews and a survey were collected. A questionnaire was used to measure the teachers' perceptions of Glogster and cooperative learning differentiated instruction models. The group members divided the labor among one another and then they met to collect and integrate all the distinct parts together to answer the questions raised. Each group reflected on the aspect they have overseen and used Glogster and cooperative learning differentiated instruction to report to class the summary of their inquiry process. Furthermore, each group learned about the other aspects discussed by the remaining groups in the class. As such, the whole class acted in turn as one group.

The subjects were 18 teachers teaching Science and English language Subjects trained in Glogster, cooperative learning, Information Communication Technology (ICT) tools and differentiated instruction at the beginning of the study, and 374 students of low

socioeconomic status in fourteen intact classes in 8 public schools were employed. 83 students were enrolled in 4 classrooms which formed the population of the control group, whereas the experimental group consisted of 293 students enrolled in 14 classrooms.

The experimental group consisted of fourteen teachers, seven Science and seven English teachers, along with fourteen classes ($n = 293$) of grade 8 learners of English as a foreign language. On the other hand, the control group consisted of four teachers, 2 Science and 2 English, who were randomly assigned to control and experimental conditions. The control group teachers were teaching 4 classes consisting of 83 students. Two projects were used as pre-test and post-test measures of oral presentation achievement. The pretest project was based on a regular project whereas the posttest project was based on the Glogster model whereby the presentation was tiered and students were given the choice to choose the form of the product they want. Different forms such as the Movie Maker video, PowerPoint, report, and simple research findings were added to the Glogs of the students to present the final product of the conducted research in the experimental group whereas students in the control group were asked to present their final product using one format following the regular research guidelines.

The study used interviews to investigate how the teachers approach Glogster and cooperative learning differentiated instruction implementation, the obstacles they face in its implementation, and the potential essentials in the pedagogy that teachers identify in their teaching. Each interview consisted of seven open-ended questions. The study also employed a survey that consisted of 4 open-ended questions and 3 closed-ended ones. A semi-structured interview was used to measure how Glogster affected teachers' perceptions of differentiated instruction using Glogster and cooperative learning differentiated instruction which might increase collaboration among students.

3.2. Participants and study context

This study was conducted at eight public schools in Beirut city. Eighteen teachers along with Eighteen intact classes ($n = 374$) of grade 8 learners of English as a foreign language were randomly assigned to control and experimental conditions. Seven science and seven English teachers along with their respective classes formed the experimental population whereas two science and two English teachers along with their respective classes formed the control group. The student population was approximately 4231 students, 81 % of whom are Lebanese and 19% are Syrians. The schools run on a September-to-June calendar and serve grades 7 through 12. A sample of 374 EFL learners enrolled in 18 sections of grade 8 was randomly

assigned to control and experimental conditions. As such, the study sample included learners from low socioeconomic families and were all native speakers of Arabic. Four classes were randomly assigned as the control group and the remaining fourteen as the experimental group. The daily communication and the social interaction were in Arabic, so the study sample had limited exposure to English which was used as the medium of instruction in English and Science, including chemistry, biology, physics, and mathematics. English is given in the context of the study as a foreign language to be learned for academic purposes.

The experimental group received differentiated instruction using the Glogster model, tiered assignments, flexible grouping, and scaffolding strategies whereas participants in the control group were given the regular research skills instruction. All the participants received the treatment for a period of 8 weeks at the rate of 6 hours per week in accordance with the Lebanese curriculum requirements. The age of the participants ranged from 13- 15 years.

3.3. Treatment

The treatment lasted for eight weeks at the rate of six contact hours of differentiated instruction per week. The study participants of the control group were given regular research project and regular oral presentation instruction followed by the use of the respective rubric to evaluate the product whereas the experimental group participants received the differentiated instruction employing Glogster and cooperative learning. Specifically, Glogster and cooperative learning differentiated instruction consisted of a range of activities which were used to inquire and investigate about the assigned aspect of the same topic. The students worked in groups of four or five to create an online interactive poster of an assigned Science or English topic. Examples of the activities used in the control group include the regular, individual topic brainstorming carried out by all students, whereas students in the experimental group could use different resources to present their findings using different Glog formats.

A differentiated instruction employing Glogster and cooperative learning differentiated instruction was implemented during eight weeks following three workshops given to the participating teachers and aiming to provide training in the implementation of cooperative learning approach, Glogster model and differentiated instruction. The training in cooperative learning approach included activities, structures, and methods. The workshops provided the teachers with examples related to the use of Jigsaw I, Group Investigation, Student Team Achievement Division (STAD), Numbered Heads Together, Think Pair and Share, Think Pair and Square, Windows Live Movie Maker, PowerPoint presentation, Wiki

and WebQuest. The third training workshop was on differentiated instruction covering the strategies for differentiating by content, process, and product. Furthermore, the workshops included active and cooperative learning strategies that can help the teachers to employ tiered assignments, flexible grouping and scaffolding that can meet students' learning profiles, interest, and readiness. The researchers provided the participating teachers with different rubrics and assessment strategies to enable them to allow their students to present the product reflecting their investigation and inquiry on the aspect assigned to each small group. For example, the researchers gave training in the use of different tools such as creation of Windows Live Movie Maker (WLMM), PowerPoint presentation, Wiki and WebQuest. Students' projects, which had been produced during the treatment duration, were analyzed to reveal their achievement and reflections concerning the Glogster model which enabled students to cooperate and use the WLMM videos, text, audio, and images they prepared. The teachers were asked to report students' perceptions of how the Glogster and cooperative learning differentiated instruction changed the ways student learned in the classrooms (See Figures 1, 2, 3, 4, 5, 6).



Figure 1. Samples of Language Arts and Health and Fitness Glogs



Figure 2. Search for Science project sample on Keeping Healthy

Featured

Sort by ▾

Resources & Tools
Travel Guide

Social Studies
Religious Studies

Arts & Music
Architecture

Social Studies
Geography



Beirut tourism
by judvm94



The Shakers
by nfaIn45



Baalbek Lebanon
by szamwf72k



Life in the middle colonies
by istapletonwts

Figure 3. Search in Glogpedia for samples on Travelling around Lebanon



Figure 4. Sample of Glog on Travelling around created by the researcher

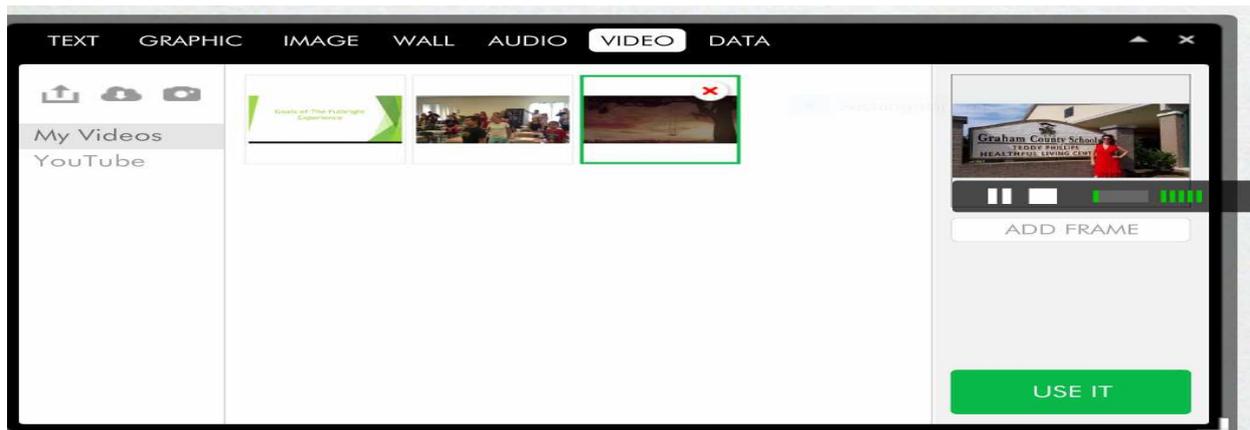


Figure 5. Sample of the videos uploaded to the Glog

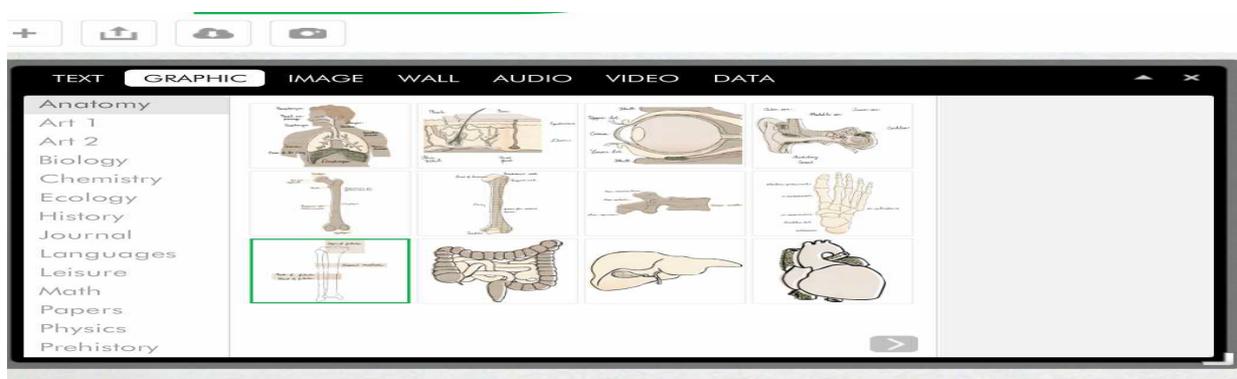


Figure 6. Sample of the graphics used by the Science students

Meanwhile, instruction in the experimental group focused on carrying out the stages of Glogster and guiding the learners to inquire about one aspect of the general topic. Stage I of the Glogster and cooperative learning differentiated instruction required having the teachers present a many-sided problem to the whole class. The teachers used the themes included in the class textbook as a basis for the many-sided problem. Students were instructed to use a variety of resource materials such as WebQuests, books, pictures and authentic materials to carry out their inquiry quest. Students were asked to generate questions related to the general problem. Then the questions raised by students were converted into subtopics which would be investigated in small groups. Afterwards, the students chose to be members in the small groups that would investigate the subtopic in which they are interested. Glogster allowed students to present their individual research plan of the inquiry process. The members of the small groups chose questions from the generated questions by the class, and they added some more questions for their investigations. Group members set the resources and divided the tasks among each other. Students carried out their plan, collected information from different sources, and reported findings to their group members. Afterwards, students

analyzed and synthesized their findings to create the glogs that would be used to present and reflect on their findings. Stage 4 allowed students to plan their presentations whereby the groups determined the findings they wanted to share with the class along with the manner and the glog formats of presenting them. The presentations of the experimental group took different forms, and they were all differentiated by content and product. Glogster allowed students to make their presentations and each group presented one aspect of the general topic that they had investigated. Then teachers and students evaluated the projects using the rubric adopted or designed by the experimental group teachers. The evaluation of the oral presentations took into account the creativity reflected in the final glog product of the group and the content the students gained during the course of the inquiry and investigation process.

Both the experimental and control group English teachers worked on unit 7 from the national textbook, titled “Traveling Abroad”. The performance objectives of the unit were as follows:

Students should be able to:

- Predict content of the text
- Seek and provide information about the thematic focus
- Make a sentence outline
- Comprehend printed discourse using text-related clues
- Demonstrate factual and critical understanding of a varied audio-input
- Reinforce the use of context clues which help decode unfamiliar lexis
- Order a series of events

Teaching Procedures for the control group

Pre-Entry Performance:

- Teacher introduced the unit by asking learners to examine the pictures on Page 127 and discuss them for a few minutes. Teacher elicited from learners as many vocabulary items as possible that deal with the thematic focus “Traveling Abroad.”
- Teacher recorded the related vocabulary terms on the board and asked learners to copy them in their copybooks. Teacher then initiated a short discussion on why people traveled abroad.
- Teacher then read the introductory paragraph aloud and explained any unfamiliar terms to the learners. Learners then took turns to comment on what they have heard.

Opening:

Teacher asked learners to answer the questions in Activity 1, P: 128 orally.

- What means of transportation are used in traveling? Which one is the fastest?
- Have you traveled abroad? Where? By what means?
- Have you ever been in an airplane? What facilities can you find in an airport?

All learners should participate in the oral communication.

Instruction / Participation:

- Teacher asked learners to read the selection “A New Terminal Opens in Prague Airport” to conduct a project on travelling by choosing a beautiful place and present things pertinent to the touristic sites, economic situation, industry and the special aspects they chose to present.
- Teachers referred students to different sources and kept checking and monitoring learners’ progress. The experimental group teachers added the Glogster mediation and instruction and asked students to conduct and present their projects using the Glogster tool.

As for the science teachers of the experimental and control groups, they worked on unit 3 from the national textbook, titled “ Immune System”. The performance objectives of the unit were as follows:

Students should be able to:

- Discuss issues in subject area
- Demonstrate critical and factual understanding of a text
- Comprehend printed discourse using text-related clues
- Reinforce context clues which help decode unfamiliar lexis
- Identify causative verbs and their proper function and usage

Teaching Procedures

Opening:

The control group teachers asked learners to work in groups of 4 to look at the pictures on Page 66 and answer the questions in Activity 1, P: 66.

Instruction / Participation:

Teachers asked learners to read the selection and find the words in the word-bank in the selection and guess the meaning of the words by using context clues. Learners explained the rationale for their guesses. As a class, learners worked in groups to conduct and present a

project on how exercise helped people look and feel shipshape, strengthened heart, gave energy, helped people sleep, made muscles stronger and more flexible, burned fat, and built self-confidence.

The experimental group teachers added the Glogster and cooperative learning mediation and instruction and asked students to conduct and present their projects using the Glogster tool. The teachers of the experimental group acted as the facilitators of the Glogster model. As such, the teachers' role was limited to being the planners who helped students move throughout the stages of the Glogster and cooperative learning differentiated instruction.

3.4. Data analysis

Open-ended interviews with Science and English teachers and a questionnaire were employed to collect data. As such, data collection for this study consisted primarily of interviews with the 14 teachers of the 14 grade 8 classes. The analysis of the collected and triangulated data yielded the findings of the study. The researchers contacted all potential participants by email and personal telephone to arrange the time to conduct the 3 training workshops in cooperative learning, Glogster model and differentiated instruction. Each interview lasted for about 20-25 minutes and was conducted at teachers' schools or over the telephone. The final source of evidence for this study was the collection and review of documents relating to lesson plans, testing reports, as well as documents pertaining to the objectives of the Lebanese curriculum and the eighth graders' English and Science textbooks at the school to be able to suggest the topics and the activities to be conducted in the experimental eighth graders' classrooms. The individual interviews were conducted prior to the implementation of the treatment, and they were audio-taped and consisted of 6 questions including follow-up probes to yield more information. The researchers employed triangulation to ensure the validity in the study. After the implementation of the treatment, a questionnaire was created using Google Drive and sent to the participants to fill out to ensure obtaining the data from multiple sources. Results from interviews, member checking analysis of written grade 8 curriculum and textbook assisted in addressing the research questions.

The treatment conditions entailed the integration of the Glogster and cooperative learning differentiated instruction given to the experimental group class whereas participants in the control group were given regular research instruction. Descriptive statistics were computed for the experimental and control group on the pre-test and post-test research achievement scores. This study was also designed to describe the experiences of Science and

English teachers in grade 8. The researchers applied member checking to ensure the validity of the data analysis. As such, the data along with the analyses were taken back to the participants to check if the interpretations were accurate.

3.5. Results and findings

The study addressed the following questions:

1. Is Glogster and cooperative learning differentiated instruction more effective than regular EFL instruction in improving English teachers' perceptions of differentiated instruction at public schools?
2. Is Glogster and cooperative learning differentiated instruction effective in improving English teachers' perceptions of differentiated instruction at public schools?

The comparison between the data elicited from the conducted survey that was filled out after the implementation of Glogster and cooperative learning differentiated instruction and interview that was conducted prior to the implementation of the treatment indicated significant positive change in the perceptions of both science and English teachers.

3.5.1. Interview

The interview consisted of 6 open-ended questions, and it was conducted before the implementation of the treatment and immediately after receiving the workshops on cooperative learning, differentiated instruction, and Glogster use. 7 Science and 7 English Language teachers participated in the study.

1. Question 1: Please mention the subject you teach and share examples of the ways you differentiate instruction in classes for struggling students.

Four Science teachers asserted the importance of cooperative learning and ICT-based activities. Two science teachers mentioned that cooperative learning activities help them to support the struggling students. Similarly, four science teachers mentioned that group work, video maker, hands on activities are useful while two teachers asserted the importance of using tiered assignments, scaffolding and flexible grouping. One teacher asserted the importance of extra sheets. Some teachers' responses were as shown below: "I teach Chemistry and I usually give extra sheets to the struggling students. "Another teacher added, "I teach science I use different ways to explain the lesson; pictures, audio, videos, flash cards."

On the other hand, three English teachers asserted the importance of using visual aids, auditory aids, hands-on activities, and different activities that meet all students' needs. One teacher added simplifying the answer for the child as shown in the following: "I teach English. For struggling students, I read the question instead of inviting them to read, then I break the question into smaller steps." Another teacher added, "I might give extra sheets or special homework. I might also explain step by step or ask the students to explain themselves. Assessment to previous knowledge is also effective."

2. Question 2: What difficulties or obstacles do you face in differentiating instruction for your struggling students?

Six science teachers asserted the need for much time and effort for planning and preparations. One teacher added, "Concentration span of some students is short and organizing my time to meet the requirements of the curriculum are obstacles in differentiating instruction." Another said, "Sometimes the subject is highly demanding and limited," while the third added, "It needs time and more effort along with more space and time." According to the fourth one, "A lot of time and many obstacles to tier assignments, for I teach mathematics."

Virtually all English language teachers asserted that time, number of students and the many curriculum requirements to cover form a main obstacle in differentiating instruction. As one teacher added, "ADHD and the lack of attention in my classes are prevalent." For another teacher, "Sometimes, I feel that I have no time to accommodate everyone's needs." A third teacher added, "The discouragement of these students as some think that it's impossible to improve. The main problem is to find activities that meet the needs of all the students."

3. Question 3: What do you think would help you better meet the needs of your struggling students?

Three science teachers asserted that active and cooperative learning activities along with allocating more time to the subject will help. According to one teacher, "Variety of activities and using different methods of teaching that could save time in class will help." For another one, "More time and space are needed. I usually put them in groups with other learners." A third teacher added, "We need more time and in my opinion those students need individual help from the teachers and different kinds of assessments that other students have. "

Three English teachers asserted that active and cooperative learning activities along with allocating more time to the subject will help. One teacher added, "I think a flexible pacing schedule and curriculum whereby it is the teacher's decision to manage when to move on and

when to slow down to meet her Students' needs is what is needed.” A second teacher added, “Setting certain methods for help and assessing students will always help the teacher determine the progress of the students in class and determine how to help them. For the third one, “More cooperative learning activities and fewer students should be placed in one class.”

4. Question 4: What assistance have you had in your school in differentiating instruction that you found beneficial?

More than half of science teachers asserted that training on cooperative learning, ICT tools and Group Investigation method have been very beneficial. A teacher added, “Smartboards - online dashboard are needed.” Another one added, “The school gave us workshops on differentiated instruction and cooperative learning activities.”, while the third one claimed: “Taking a workshop in positive discipline is needed.”

Five English teachers asserted that more training on planning instruction, differentiated instruction and active learning activities such as Jigsaw and group investigation models is needed.

5. Question 5: What type of support do you receive from the administration in differentiating instruction in your classroom?

All science teachers asserted that they received a training workshop on the use of Glogster in classroom, cooperative learning and differentiated instruction.” A teacher added, “Ultimate authority!” A second one added, “They provide a projector and a pc.” They all claimed that the school provided support through development program for teachers, active learning, and group investigation activities as well.

6. Question 6: What pre-service preparation, training, or professional development helped to prepare you for differentiating instruction for struggling learners?

Virtually all science teachers asserted that the three workshops they attended on differentiated instruction and cooperative learning were useful. A teacher added, “Classroom management workshop will be useful.” Similarly, all English teachers asserted that three workshops they attended on differentiated instruction, training on Glogster model, Jigsaw and cooperative learning activities were useful.

3.5.2. Survey

The survey was created using Google Drive and was sent to the participants to fill out after implementing the treatment. It consisted of 2 open-ended questions and 4 close-ended ones. The survey intended to answer questions 1 and 2.

1. What could you say about addressing the needs of students who struggle in your class?

On the one hand, five science teachers indicated that every teacher should be in charge of helping the struggling teachers. However, only two of them indicated that it is difficult to differentiate due to time constraints and the need to do much planning. As one teacher added, “We should put ourselves in the student’s shoes to understand the problem. More time and more freedom to choose the form of the product they want for their assignments.”

On the other hand, virtually all the English teachers asserted that differentiated instruction is great and teachers can tremendously help the struggling students. 85.7% of English teachers supported employing differentiated instruction including Glogster and cooperative learning. However, one teacher indicated that struggling students might feel more at ease should they be segregated from their peers. Another one added, “Students need more assistance and I am in favour of segregating them and giving them the same curriculum but taking into consideration their difficulties and trying to give them one to one assistance. “

As such, the post treatment survey indicated virtually all of English teachers and 85% of science teachers changed completely their perceptions of employing differentiated instruction after employing the treatment.

2. Did you find the training workshop on differentiated instruction you attended beneficial?

All science and 91.7% of English teachers emphasized the significance of the training they received on differentiated instruction.

3. What kinds of professional development do you think teachers need in order to help meet the needs of struggling students?

All science teachers asserted that differentiated instruction, classroom management, cooperative learning activities and teaching Glogster are useful for the struggling teachers. As some teacher comments indicate, “Class management, workshops on the innovative and new methods of teaching will be good,” “More guidance and application on methods of teaching and cooperative learning activities are needed.” Finally, for one teacher, “More training in positive discipline and class management will be strongly needed.” Some other answers given by English teachers are as follows:

“Teachers need more practical solutions taking into consideration the number of the students and the time constraints.”

“We should learn how to take an intervention plan. We need a workshop related to the different types of intelligence and how to approach each type.”

4. Do you believe that differentiated instruction is effective in increasing students' achievement?

Virtually all science and English teachers confirmed the necessity of differentiating the instruction.

5. Do you believe that Glogster model is effective in increasing students' achievement and enhancing differentiated instruction?

All science teachers and almost all English teachers (92.9%, n=6) confirmed that Glogster model was effective in increasing students' achievement and enhancing differentiated instruction.

4. Discussion

An overwhelming majority of experimental teachers reported that most of their students revealed positive perceptions of Glogster and cooperative learning differentiated instruction learning experience. The students expressed great satisfaction with the amount of work, ease of conducting the project and the choices they were given to present their products. Very few (n=2) reported that some of their students did not enjoy the Glogster model. The comparison between the responses of the interviews conducted prior to the implementation of treatment and after giving the teachers the training workshops and the responses to the survey conducted after implementing the treatment show that teachers' perceptions of differentiated instruction using the Glogster tool in general have improved since the 14 Science and English teachers asserted the necessity of differentiated instruction and the usefulness of the Glogster tool. The perceptions of science teachers of implementing Glogster and cooperative learning differentiated instruction to improve eighth graders' project skills were not significantly positive prior to the implementation of Glogster and cooperative learning differentiated instruction, which was similar in the case of English teachers.

On the other hand, as evidenced by the post treatment survey, 100 % of English teachers and 85 % of science teachers changed completely their perceptions of employing differentiated instruction after employing the treatment. The perceptions of the English and

science teachers of implementing Glogster and cooperative learning differentiated instruction to improve eighth graders' project skills significantly changed after the implementation of the project. Conversely, most teachers of the control group (n=3) reported that most of their students revealed dissatisfaction with the huge amount of work each one of them had to carry out. Moreover, they expressed a great need for more guided research steps, and most weren't excited about students' presentations. Most experimental group teachers (n=13) indicated that differentiated instruction has been effective with struggling readers. Many teachers (n=10) reported that the Glogster model, tiered assignments and scaffolding were effective in improving struggling students, yet the assessment and evaluation strategies demanded much effort. However, some teachers revealed (n=4) that it is difficult to differentiate content, process, and product due to the diverse abilities of learners in a classroom. Very few of them (n=2) reported that differentiation is only effective when they have time to plan and prepare as teachers need more time to plan for differentiating classes.

The results of the present study revealed that using the Glogster model as a differentiating tool was effective in improving the teachers' perceptions of differentiated instruction given the limited-English proficient EFL eighth graders. Likewise, the use of the Glogster model was found to improve the students' oral presentation skills and research achievement. A possible explanation of the effectiveness and positive perceptions of the Glogster model is that the structure and the use of this form of learning facilitates scaffolding, allows flexible grouping, and encourages tiered assignments. The features of the Glogster model allowed differentiation by content, process and product and met students' readiness, interest, and profiles. The Glogster model is an enjoyable experience in conducting and presenting projects as shown in the data collected from the questionnaire and interviews filled out by the participants in the experimental group. The findings of the study corroborate those of Tomlinson and McTighe (2006); Bailey and Williams-Black (2008); and Tomlinson and Imbeau (2012), who also found that when teachers took the time to differentiate instruction, achievement increased and differentiation provided students with an opportunity to perform at an acceptable level of difficulty.

The findings align with those of Dean, Stone, Hubbell, & Pitler (2012), who indicated that effective classroom instruction demands having the teachers design the curriculum which should promote student understanding and skills to be learned while meeting the benchmark and standards required. Likewise, the findings agree with those of Cutter (2015), who believed that the integration of technology into classrooms improves differentiation in the classroom and enhances learning. Similarly, the findings of the study corroborate those of

McCoy (2014) and Martinez-Alba et al. (2014), who believed that the Glogster model reinforces a great sense of collaboration among students and enhances motivation.

7. Implications for the future and final conclusions

The present study intended to investigate how the Glogster and cooperative learning differentiated instruction can be used as a differentiating educational model that might enable the participants to increase their achievement and improve teachers' perceptions of employing differentiated instruction at public schools. The study contributes to improving the quality of integrating the Glogster and cooperative learning into eighth grade Science and English language instruction, which is presently a scanty area of research. The Lebanese curriculum and the national English and Science textbooks don't include any mention for differentiated instruction. The curriculum emphasizes that eighth graders should believe in themselves as active and dynamic readers who can transfer their skills to other situations. As such, the use of the Glogster and cooperative learning differentiated instruction intended to bridge the disparity in the curriculum and the poor textbook activities. Students' ability to understand, draw conclusions, and defend their conclusions rationally was a major goal. The uniqueness of the approach in a public school in Lebanon would make the present study significant in the field of teaching research and oral presentation skills in both, Science and English Language Subjects. The findings of the study may encourage administrators and teachers to implement professional development programs that focus on differentiated instruction using Glogster and cooperative learning differentiated instruction along with other specific instructional practices that contribute to increased achievement for the students.

7. Conclusions

The implementation of differentiated instruction using the Glogster and cooperative learning differentiated instruction model improves students' research and oral presentation skills in the English and Science classrooms. The Glogster and cooperative learning differentiated instruction model, tiered assignments and scaffolding were effective in improving struggling students, yet few teachers need more time to plan for differentiating classes. Differentiation using Glogster and cooperative learning seems to provide learners with an interesting environment to investigate a certain topic. Glogster could improve collaboration among learners and enhance research and oral presentation skills. The findings of the present study suggest that this form of learning could be an effective student-centered method which could widen students' understanding of the different aspects of a certain topic and improve their

synthesis skills. Furthermore, the findings show that teachers' perceptions of differentiated instruction using the Glogster and cooperative learning differentiated instruction model in general have tremendously improved since all the experimental Science and English(n=14) teachers asserted the necessity of differentiated instruction and the usefulness of the Glogster tool. As such, the model is recommended as a pedagogical approach which would boost motivation, improve students' research skills, and facilitate differentiated instruction by content, process and product. Finally, further research is recommended in order to determine the generalizability of these findings regarding the efficacy of the Glogster and cooperative learning differentiated instruction model in improving the research and oral presentation skills of various school subjects other than English and Science and into other socio-cultural contexts.

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