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Training Critical Thinking Professionals Through İmece Circles and Concept Maps

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Özet

Eğitim ailede başlar ve okuldaki profesyoneller olan öğretmenlerin rehberliğinde devam eder. Okullaşmanın hedefi olan öğrenme karmaşık bir süreçtir. Ancak bilişsel yöntemleri izleyip kavram haritaları gibi son gelişmeleri sınıfta uygulamanın öneminin ayırdında olan nitelikli öğretmenler vasıtasıyla etkin bir öğrenme sağlanabilir. Eleştirel ve mantıklı düşünme becerileri geliştirmenin bir yolu olan Kavram Haritaları bağlantılar aracılığıyla öğrencilere bireysel fikirlerden bütünselliğe nasıl geçebilecekleri konusunda yardımcı olur. Çoğunlukça bilindiği gibi, anlamlı öğrenme yeni kavramların mevcut bilişsel yapıya asimile edilmesi mümkündür. Geleceğin liderlerinin yönlendiricileri olan profesyoneller günümüz yükseköğrenim kurumlarında yetiştirilirken bu gereksinim göz önüne alınarak yetiştirilmelidir. Bu makalede yazar bir eğitim fakültesinde verdiği "Sınıf Yönetimi" dersinde uygulanmış olan ve Kavram Haritaları eğitimine odaklı iki atölye çalışmasının amaçlarını, adımlarını ve sonuçlarını paylaşmaktadır. Ayrıca atölyeye katılan öğrencilerin bazılarının yansımaları da makalede yer almaktadır.

Anahtar Kelimeler: Kavram haritaları, işbirliği, öğretmen eğitimi, eleştirel düşünürler

İmece Halkaları ve Kavram Haritaları Yoluyla Eleştirel Düşünen Meslek Sahipleri (Profesyoneller) Yetiştirme

Abstract

Education starts in the family and goes on under the guidance of school professionals, teachers. Learning, which is the goal of schooling, is a complex process. It can only be effective through qualified teachers who are aware of the significance of knowing and applying recent cognitive methodologies such as concept maps. Concept maps are a way to develop critical and logical thinking study skills by revealing connections and helping students see how individual ideas form a larger whole. As is known by many, meaningful learning involves the assimilation of new concepts and propositions into existing cognitive structures. Professionals, as the leading forces of future leaders, need to be trained based upon the satisfaction of the above-mentioned needs during the university years. In this article, the author will share the goals, steps and outcomes of two "Concept-Mapping" workshops conducted at "Classroom Management" course at a Faculty of Education. The readers will also find reflections of the teacher-trainees impressive.

Key Words: Concept maps, collaboration, teacher trainees, critical thinkers

1. INTRODUCTION

The world is changing and as a result new concepts enter our lives. The role of technology in that continuous change is unbelievable. Machines and computers are taking place of many tasks and responsibilities of human beings. Consequently, 'wasted time and wasted energy' is decreasing in many fields. However, in the educational world technological devices and robots cannot easily replace "teacher". A good teacher, starting from the very early ages of human history, has been addressing not only minds but also spirits and bodies. In other words, in order to train a whole person, teachers are supposed to instruct in a well-balanced manner concerning cognitive, affective and psychomotor skills.

Experts are working hard to improve new methodologies and tools to foster learning efficiency. Their efforts mainly focus on cognitive issues, which might be accepted as the headquarters of thinking skills, such as, planning, learning and problem solving. In this article, the focus will be on the critical thinking skills of teachers who are

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the main artists of ornamenting the minds of younger students. Critical thinking is foundational to the effective teaching of any subject. Whenever we think through any subject whatsoever, we can do so only through our capacity to reason and make sense of things. "We can think through any subject well only when we reason our way effectively through problems and issues within the discipline" as Linda Elder pointed out in her article titled; "Professional Development Model" (2004). A workshop was designed for a group of senior teacher trainees at the Faculty of Education, Boğaziçi University on teaching mind- and concept-mapping related to critical thinking skills with the support of Dr İnelmen who had created İnelmen Technique about Concept mapping. Eighty students of "Classroom Management" course studied on various concepts and then used the concept-mapping technique to write short reflective essays. After a general informative part about the concepts, the steps and the outcomes of that workshop will be shared with the readers (participants) in the following sections.

2. LEARNING AND COLLABORATION IN SCHOOL

The goal of schooling is learning and it is not a simple process. Many educators have worked on it for ages to create ways that are more productive, and it necessitates more effort due to the continuous changes in the world. Some experts started with the definition of learning and its implications like Fisher and Frey (2008). They listed them as follows:

- The process of acquiring knowledge or skills,
- A permanent change in behavior,
- A change in neural function as a consequence of experience,
- The cognitive process of acquiring knowledge or skills,
- An increase in the number of response rules and concepts in the memory of an intelligent system.

Then, they pointed out how a professional, for instance a teacher, developed his expertise through models, feedback, peer support and lots of practice gained throughout the years. According to them, this model of learning environment is called the "gradual release of responsibility".

Pearson and Gallagher (1983) thought that the cognitive load of that model of instruction should shift slowly and purposefully from teacher-as-model, to joint responsibility, to independent practice and application by the learner. During the early years of the 21st Century, many educators emphasized the gradual emphasized responsibility of learners for their learning (Graves and Fitzgerald, 2003; Duke and Pearson, 2002). That model has some common characteristics with several theories including; Piaget's work on cognitive structures and schema, Vygotsky's work on zones of proximal development, Bandura's work on attention, retention, reproduction and motivation and scaffolded instruction of Wood, Bruner and Ross. In many models, they lack an important component, which is learning through collaboration with peers. The word "Collaboration" has a cultural equivalence in Turkish: "İmece". It means to solve problems in villages by villagers by coming together.

3. METHODOLOGY: İMECE CIRCLES AND CONCEPT MAPPING

A collaborative learning technique that was designed and applied by the author is called "İmece Circles (ICs)" in Turkish educational settings. A similar model is "Students' Quality Control Circles (SQCs)". The member countries of the World Council for Total Quality and Excellence in Education (WCTQEE), established in India, use SQC methodology to train qualified, problem solving new generations. SQCs and/or ICs are based upon PDCA Mindset which stands for "Plan, Do, Check and Act". Forming a team, identifying a problem and planning after brainstorming, finding main and root causes of the problem, then developing strategies for solving it necessitates acting together and using various critical thinking tools such as 'mind-mapping' and 'concept-mapping'.

"İnelmen technique" which was designed by Dr. Erol İnelmen, who is a retired academician from Boğaziçi University, as a combination of mind- and concept-mapping systems to create awareness about problematic concepts of any problem area during the planning phase.

During the "Classroom Management" lesson of Köksal, İnelmen and Köksal used it to create awareness on teacher trainees about the probable characteristics of the future educational world. It was used in three sessions of "Classroom Management Course at the Faculty of Education, Boğaziçi University in the fall and spring terms of the 2015-2016 academic year. The teacher trainees were the various departments of the Faculty including Foreign Languages Education, Educational sciences, Pre-school, Mathematics, Physics and Chemistry.

A teacher is a leader who trains future leaders, and strong leaders understand that leadership is about relationships and relationships only develop through collaborative actions. Before sharing the steps and outcomes of the workshop, let us share some needed concepts.

4. CRITICAL THINKING SKILLS AND SOME RELATED CONCEPTS

It will be wise to share some concepts that might be complex for the readers. They are as follows:

"Critical thinking" is the ability to think clearly and rationally about what to do or what to believe. It is also called "Critical analysis" involving critique. Beyer (1995) means making clear, reasoned judgments. Whereas Elder (2004) mentions a rich set of concepts of critical thinking that enable us to think our way through a subject or discipline, through any problem or issue.

Critical thinking is an essential component of managing a classroom for a teacher and managing school for a principal. Since the senior teacher trainees are going into a profession soon, it is very important for them to internalize the necessity and the implementation steps of critical thinking for their future students. Elder (2004) describes critical thinking skills as the guiding force behind any and all professional development. John Dewey is one of many educational leaders who recognized that a curriculum aimed at building thinking skills would benefit the individual learner, the community, and the entire democracy. Each discipline adapts its use of critical thinking concepts and principles (principles like in school). The core concepts are always there, but they are embedded in subject-specific content. For students to learn content, intellectual engagement is crucial. All students must do their own thinking, their own construction of knowledge. Good teachers recognize this and therefore focus on the questions, readings, activities that stimulate the mind to take ownership of key concepts and principles underlying the subject.

"Analytical thinking" is a critical component of visual thinking that gives one the ability to solve problems quickly and effectively.

It involves a methodical step-by-step approach to thinking that allows you to break down complex problems into single and manageable components (Kumbeswara, 2015).

"Mind-Mapping" is used to visually organize information. A mind map is often created around a single concept, drawn as an image in the center of a blank page, to which associated representations of ideas such as images, words and parts of words are added.

Major ideas are connected directly to the central concept, and other ideas branch out from those. Mind maps are considered to be a type of spider diagram (https://en.wikipedia.org › wiki › Mind_map).

"Concept-Mapping" or "conceptual diagram" is a diagram that depicts suggested relationships between concepts. It is a graphical tool to organize and structure knowledge (Hager, Scheiber & Corbin, 1997).

A concept map typically represents ideas and information as boxes or circles, which it connects with labeled arrows in a downward-branching hierarchical structure. The relationship between concepts is articulated in linking phrases such as causes, requires, or contributes.

Joseph D. Novak and his research team at Cornell University developed concept maps in the 1970s as a means of representing the emerging science knowledge of students. It aims to enhance meaningful learning in the sciences. Concept maps have their origin in the learning environment called constructivism (Novak & Cañas, 2006). In his book "Learning How to Learn", Novak (1984) states that "a meaningful learning involves the assimilation of new concepts and propositions into existing cognitive structures". His work is based on the cognitive theories of David Ausubel who stressed the importance of prior knowledge in being able to learn or assimilate new concepts.

The current national Curricula for K-12 levels of the Turkish National Education System based on Constructivism in 2005. That is the reason of the workshop; to guide future teachers about concept mapping which is an application of constructivism. However, it might also be used at various faculties that are training professionals in different fields.

5. MIND MAPPING VERSUS CONCEPT MAPPING

Concept maps can be contrasted with mind mapping, which is often restricted to tree structures. Another contrast between the two is the speed and spontaneity when a mind map is created.

A mind map reflects what you think about a single topic, which can focus on group brainstorming.

A concept map can be a map, a system view, or set of concepts. Concept maps are more free form, as multiple hubs and clusters can be created, unlike mind maps, which fix on a single two-centered approach. Concept maps are widely used in education and business ((Novak & Cañas, 2007)

Uses: Concept maps are widely used in education and business. According to Moon, Hoffman, Novak and Cañas (2011), uses include:

- Note-taking and summarizing gleaning key concepts, their relationships and hierarchy from documents and source materials,
- New knowledge creation,
- Collaborative knowledge modeling and the transfer of expert knowledge,
- Facilitating the creation of shared vision and shared understanding within a team or organization,
- Instructional design & training,
- Increasing meaningful learning for example through writing activities where concept maps automatically generated from an essay are shown to the writer,
- Communicating complex ideas and arguments,
- Examining the symmetry of complex ideas and arguments and associated terminology,
- Detailing the entire structure of an idea or line of argument (with the specific goal of exposing faults, errors, or gaps in one's own reasoning) for the scrutiny of others,
- Enhancing metacognition (learning to learn, and thinking about knowledge)
- Improving language ability,
- Assessing learner understanding of learning ob-

jectives, concepts, and the relationship among those concepts,
- Lexicon development.

Steps of Concept Mapping:

Concept mapping is a type of structured conceptualization, which might be used by groups to develop a conceptual framework, which can guide evaluation or planning. In the typical case, six steps are involved (Trochim,1989). Here is an introduction to concept mapping and evaluation:

1. Preparation (including the selection of participants and development of focus for the conceptualization),

2. Generation of statements,

3. Structuring of statements,

4. Representation of Statements in the form of a concept map (using multidimensional scaling and cluster analysis),

5. Interpretation of maps,

6. Utilization of maps.

6. PREPARATION AND IMPLEMENTATION PHASE OF THE WORKSHOP

At the outset of any professional development program, which is an innovative technique in this article, we need to consider how we can foster a climate throughout the college focused on the development of thinking abilities. We did this to create an atmosphere that places thinking at the focal point of the teaching principle of the faculty. We can share our experiences to provide support for faculty to learn the foundations of İnelmen's Technique so that they can begin to integrate it into their teaching.

In this section, I will share the steps and outcomes of a pilot workshop to suggest an innovative model for learning and applying concept mapping to teacher training programs on the way of training critical thinkers. Teachers' Colleges (with faculty members and students), Authorities of Higher Education Council and Ministry of National Education), Society (professionals and alumni), local governors and NGO leaders should collaborate together with the university, administration.

Before the workshop, we came together and shared the information about the profile of students, which are senior students of a faculty of education attending various departments. Dr İnelmen prepared some concepts cards to give students at the beginning of the workshop. I, as the instructor of the course, informed them about the guest speaker and the workshop.
The workshop started with a general brainstorming about the general characteristics of "education" and "teacher" in the world. A timeline was drawn on the board and from past to present, and from present to future students were asked to list the characteristics of those two concepts orally. After that warm-up activity, we distributed concept cards to students randomly along with an A-3-sized empty paper. We asked them to study in pairs first. They would think about the concept written on the concept card and produce a mind map. After the completion of that first step, we asked two pairs to come together and combine those two concepts with their maps into a new concept map on the back of the A3 paper. We also asked to write their names on it. After that, the second step came: We asked the first two pairs to collaborate with another two-paired team. Thus, four concepts came together and they talked and shared a lot about that new gathering. However, some teams preferred to stay as a member of four instead seven or eight. We allowed that due to psychological reasons. Each time we gave more time to the teams. As a third step we distributed a new A3 paper and asked them to draw a final concept map giving a name to their team and write a paragraph about the concepts met on the third page. They had half an hour and those who finished first presented their study before their peers. All the study took 2 hours and students seemed enjoyed a lot. We repeated these two more times to give an opportunity to all senior students of the Faculty.

In the following part, you will see some sample maps and paragraphs from those workshops.

7. OUTCOMES OF THE WORKSHOPS

Teacher trainees wrote the following paragraphs about the concept maps they prepared based upon the given concept cards. Some students worked in large groups, some worked in pairs, and one team shared the summary of the leader student's comments as a final step.

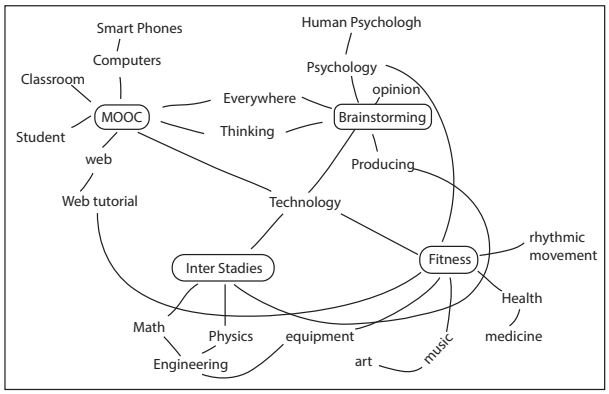
7.1. Some of the concept maps and all essays

1. Geopolitics and Computer Assisted Teaching

Geopolitics is interested in the physical position of the countries and its effects on political issues. These issues and relations between countries are usually difficult for students to engage in. At this point computer-assisted teaching may help to teach geopolitics via games, simulations and tutorials. Because geopolitics and computer assisted teaching concepts to focus on the human beings, they are two for people and because education focuses on people, they are related from in the educational perspective. On the other hand, inelmen.boun.edu.tr and Academy (Plato) focus on education, they are related to the other two concepts in this perspective, and they intersect at this point. All concepts have an educational perspective and that causes their intersection at the educational point.

(Team members: G. Bayer, K. BAŞ, C. Aslan, N. Çoban)

2. MOOC (Massive Open Online Course)



MOOC, brainstorming, inter studies and fitness seem different concepts from each other but when we do concept map, we see that they are related concepts. For example, MOOC and brainstorming are everywhere and they are rooted from thinking. Inter studies include mathematics, physics, and so on. These subjects are associated with engineering and equipment. When considering fitness, it also involves equipment. In addition, it contains art, music, health, medicine, and rhythmic movement. While practicing fitness, people can take advantage of a web tutorial. In addition, web tutorial connects with web, because MOOC is related to web, fitness and MOOC interrelate with each other. At the same time, MOOC coordinates with computers, smart-phones, students, and classrooms, which means thinking is the center of our lives. In this perspective, psychology, human psychology, opinion, producing are interrelated with brainstorming. Furthermore, because fitness provides people to comfort, it affects human psychology. When taking considering all of these, MOOC, brainstorming, inter studies and fitness are related subjects although they appear different.

(Team members: B. Koca, N. Akkaya, G. Özer, Ş. Baba)

3. Internet, Web 2.0, Cyber Security:

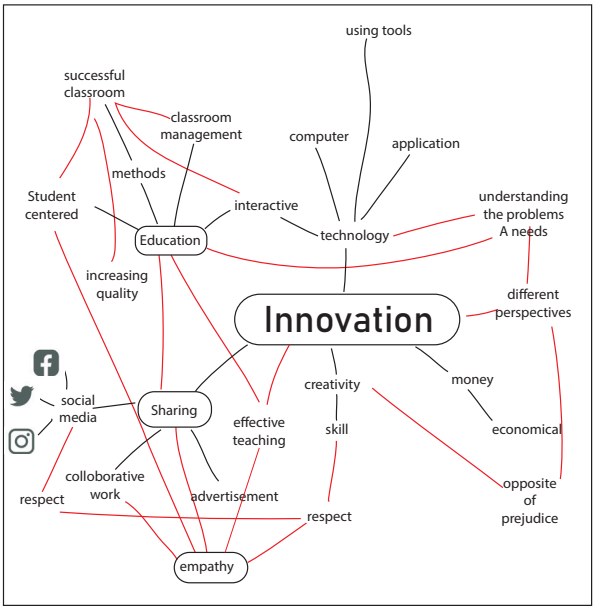
Nowadays, the Internet takes places among basic needs. Therefore, we can make a connection with whatever we want. Web 2.0 is a beneficial way of using the Internet. It eases communication and sharing and this creates a social networks like Facebook, Wiki. In web 2.0 instruments, collaborative working is one of the crucial conditions using the Internet. We need software and some popular tools, like smartphones and, computers. In the modern era, cyber security is an important topic to pay attention. There are many websites on the Internet. Therefore, people need to pay attention to their security. Moreover, governments should need to take precautions using laws.

(Team members: A. Sevim, M. Dündar, Ü. Çonay, V. Akdeniz)

4. Language Immersion

Language Immersion is a program aiming to help L2 Learners acquire the target language in the setting where the learners are only exposed to only the target language and the culture. MOOC, Google, and Brainstorming are the tools that can help us with this immersion process. MOOC provides collaborative opportunities for students. Brainstorming activates students' creativity and innovative skills. Google can be used to enhance the Brainstorming process by searching for some concepts and MOOC can be reached from google.

(Team members: A. Gez, A. Kocabalcıoğlu, G. Erdoğan, S. Karakulluk)



5. Innovation, Empathy and Education:

Recently, the development of technology and the speed of the light race with each other. When we examine the underlying reasons of improvements in technology, we find out that technology rise from human needs. In light of these needs, empathy forms the backbone of determination of them. Being an innovative person, starts with thinking in a different way that includes different perspectives.

(Team members: E. Durak, B. Ulu, H. Sezen, E. Öziç)

6. Flipped Classroom and Rubrics:

In the changing and developing today's world of technology, in order to create more interactive classroom environment teaching techniques have started to shift from direct instruction to more active student oriented instruction. Flipped classrooms are one of the applications in education.

To provide objectivity in this learning system, since the diverse learning styles are concerned the assessment of students should be measured and evaluated with care. Thus, using rubrics is an effective tool for objective and effective classroom assessment. The rubric is being teacher-oriented is overlapped with the part of concept exploration which includes articles, video and website sources for students to study out of classrooms. (Four Flowers: B. Büçkün, R. Yavuz, B. Kutlu, Zeynep M. Demirel)

7. Creativity and Artificial Intelligence:

To adopt developing new environment, people become more and more open-minded and innovative. Hence, they need to produce for meeting their needs. When they do brainstorming for the production. Creativity is seen as an indisperside part of their life. Therefore, they use technology in every area with developing technology, innovation gains importance in science, etc. New researches and studies in neurosciences create the idea of "artificial significance" to ease human life. Because lack of meeting increasing needs, people become the need of more ideas, for instance in medicine, robots are used for surgeries. Consequently, we think that creativity and artificial intelligence will keep feeding each other in the future.

(Team members: G. Erdoğan, G. İnan, N. Kaya, Ş. Er)

8. YouTube:

With the invention of the Internet, everything became more accessible. This invention can be seen as connectivity for humanity. It also has helped people share information reciprocally. These are also subdivisions, which enable internet usage more specifically. People can use videos to share their information and hobbies via visual communication tools. YouTube and MOOC are profound examples of these. Hence, there is also a path for communication via written tools. People can establish their own websites, which are called Blogs. To share their thoughts, feelings by typing on a website. In addition, visual contents like videos can be used by universities to offer supportive education. These are called massive open online courses (MOOCs). The internet offers many unique opportunities to connect with people.

(Technowires: B. Uslu, L. Koşar, M. Kabayuka, D. Er, U. Aydın, D. Özçelik, F. Gül, F. Gemici)

9. Convergence & Empowerment:

In today's world, there are many areas, which are still in progress. Two of them are neuroscience and academy. Although they seem different from each other, they are very close in terms of various concepts.

The main concept they share is that they are highly integrated with society, enlightenment and science. Throughout history, these areas have been evolving and progressing. This progress can be achieved in certain ways. Humankind has used the mind, effort, time, opportunities and energy as much as possible. At that point, different ideas, different minds, different talents and skills have come together from diverse cultures and backgrounds. This progress requires heavy responsibility and effort. These both have to share convergence and empowerment as well.

(Team members: Y. Cengiz, E. Cengiz, M. Gültekin, G. Kaynar)

10. Inclusion & Co-opinion

Human Rights has been one of the most controversial topics related to the social and individual contexts. Individual rights consists of education right and other rights. EREC and TOG are institutions in which people perform voluntary acts requiring inclusion in social interaction with co-opinion with their partners in the institutions.

(Team members: P. Aydın, Şule B. Aşıkoğlu, S. Kahraman, R. Candan)

11. Brand New Age in Education System

With the improvement of technology, educational systems have gone through lots of changes. For many years, classroom environments have been started to be integrated with technology in terms of improving the quality of communication and interaction. From teacher-centered education, we have shifted our focus to students. Computer generated equipment facilitate our students' learning by making them more active and attracted because the teacher is not the only focus and with the teacher have become the facilitator conducting the activities or presenting the augmented reality materials. Students have become both independent and at the same time they have started to work collaboratively.

At the same time, they are not restricted only to classroom settings. They can easily communicate with each other and their teacher via e-mail systems like Edu roam, which is a universal system for universities, or students can be recommended movies to watch at home related to their study (virtual reality products).

(Team members: B. Saral, D. Bayrak, M. Konyar, K. Yazkan)

12. Concept Maps and Big Data

In the modern world, with the development of Information Technology (IT), we have big data that we do not know its borders. In our digital age, considering developments in science and the increase in research opportunities, we need to organize and store information. The human mind uses concept maps to organize and store information while computers need software.

(Team members: G. Altıntaş, S. Doygun, M. Dinç, H. Akbaş)

13. CALL+YouTube+Geopolitics+Crowd+Finance

The common points, which these concepts have, is; "people". For instance, a subject about "geopolitics" will be taught. To teach "geopolitics" as a subject matter, we can benefit from computer technology. Visual and audio aids can help our teaching. For this teaching, we can support crowd financed tools such as; Moodle and Edmonds. Besides, we can advertise this project via YouTube.

(Team members: H. Uğurer, M. Nur Altun, T. Pirdal, S. Ayna)

14. Blogs & Web 2.0

Nowadays, students are benefiting from both online courses and PC Programs. Microsoft's secretly programmed software enables the students to revise their curriculum. Thanks to these online courses, with Blogs and other technologies, students have a chance to share their opinions without the necessity of being present. Web 2.0 Technology opens the pathway for Blogs, social networks, video channels, etc. With that, technology students can take courses from other countries online. This can happen simultaneously. With the new versions of firmware in mobile phone technology, Web 2.0 is more accessible.

(Team members: S. Öztürk, B. Kaplan, K. Koçdeveci, B. C. Karaağaçlı)

15. Call Centers

"Learn Direct" is a call center in the UK. It has a program that enables to see who is calling; from where s/he is calling. This program has all the information related to the UK to guide for the caller. The program in the "Learning Direct" can segregate computer robots and human beings from each other. If we personalize this program in learning Direct, it has sub-programs and software looking like neurons in human minds. With the development of technology, the call center helps people day and night.

(Team members: B. Demircan, G. Öksüz, E. Yurt, S. Kara)

16. Cyber-Security

By using the Internet and technology, it gets easier to reach information Moodle and LCC-like systems provide us this accessibility. In addition, cyber-security protects these systems. Problem solving skills of learners are greatly comforted by the catalog and tagging systems.

(Team members: T. Demircan, S. Koyuncu, C. Kalender, D. Koyuncu)

17. Concepts & Project-Based Learning

Mind allows us to create concepts by dividing the existing nations into categories. It also helps us to understand these concepts and create connections among them. Mind also serves as an assistant in improving these concepts and their relations. One example of these concepts is education. Several methods are used in different kinds of classroom settings. Project-based learning is one of these methods. PBL is a student-centered method. It helps students from different backgrounds to integrate. Thus, this method can be used effectively in cosmopolitan classroom settings.

(Team members: D. Bağcı, E. Kavi, Ö. Havancı, G. P. Sarman)

18. Mobility-Cloud-Quantum Computer

Climate changes in the world will lead to migrations among countries. People will need to live in places that are more appropriate in order to survive. They will need to produce weather-tolerant devices, new climate technologies, quantum computers to adapt themselves to the new environment. As life conditions will change, they will need to acquire new professions, skills, and sustainable technological devices. Besides, in order to manage the new environment and computer quantum devices, some skillful professionals will need to take responsibility. They will enable people to make use of new technologies. People will produce new kinds of products to lead their lives more comfortable.

(Team members: S. Başar, G. Tahtacı, E.Kuzu, G. Sabucalı)

19. Integration of Different Fields

In modern societies, people are getting more and more obsessed with their appearances. The number of individuals who are complaining about their bodies is constantly increasing. Maybe the reason behind this is the fact that life is now easier for human beings and they do not have to spend much time and energy to complete these daily tasks. Therefore, they go to fitness centers to work out or to pretend to be working out just to show off in the different fields of social media. Because of this, the issue emerging from social media is influencing the different stages of society by eventually affecting the psychology of individuals.

(Team members: M. Özçelik, E. Kudu, İ. Nurtan, A. Ç. Ağca)

20 . Integration, Application & IPAD:

Nowadays technology is hand-in-hand with education. Technological advances help integration in school, parents and students with /without needs for special education. In order to integrate and create a healthy, happy and content environment, and foster education outside the school applications and IPADS are inevitable. With the help of technology teachers and policy makers may redesign the curriculum according to the needs. With the use of educational technologies, we can increase the quality of education.

(Team members: T. Öztürk, A. Şahin, B. Çetin, F. Mütevelli, B. Günaydın, İ. Nurten, B. Bozkurt)

7.2.Reflections

After the workshops, students wrote their reflections about the new technique and the outcomes. Here are three of them:

- Reflection by C. Aslan: First, we tried to link a website with Pluto's academy. The Internet address is a website, which gives information about lectures. In addition, Pluto's academy is the beginning of schools. Therefore, we taught that they are linked to each other with education and producing knowledgeable society. Both of them contribute to the development of society and the accumulation of knowledge. After creating our concept map, we tried to combine the other concept map with ours. For geopolitics and com-

puter-assisted teaching, it can be said that they are also linked to each other in the context of education. Computer-assisted teaching can produce programs in order to make students learn the positions of continents better. In short, we taught that the common point between our concept maps is education and we combined them in this way. It illustrated to us that we can utilize different concepts while producing something. It was a great practice to extend our vision and improve creativity, which has an indispensable place in teaching.

- Reflection by Z.A. Alan: First, I think about my concept, which is Cosmopolitan, and write what I know about it in my notebook. Then, I needed to search the concept on the internet in detail because my knowledge for the concept was not enough to make a concept map for it. After searching and a small conversation with Prof İnelmen completed my concept map. After that, I worked with my pair whose concept is Project-Based Learning and tried to make matches between these two concepts. To be honest, I was not sure what we are doing and did not know what it makes us lead to. It is because all I know about the field of the concept map is to use it in lesson plans. However, after completing this stage, my horizon was expanded and I realized that the area of the concept map is not just for education. We can need and use it for combining two or more concepts, works, domains, etc. to produce a product, idea, result, etc. I sincerely want to thank both of you for this activity. It will be very useful to us.
- Reflection by a student who did not want to share his name: I would like to thank you, my instructor, for bringing such an excellent person to our lesson. I did not understand how the time passed and I enjoyed a lot. I also noticed that all classmates enjoyed a lot. All the topics he mentioned are basic and impressive for our future professional days. During those difficult exam days, he showed us how our subject matters might be enjoyable. Her motto in his life, being a lifelong learner, was also affected me a lot. I will use his method in the near future in my courses as well. Thank you again.

8. CONCLUSION

Collaborative work forms the essence of education. Even though personal development is an important part of thinking and producing, when all the needed parties come together the process becomes more fruitful and joyful. Several scholars and experts have been developing innovative ideas around the globe to bring some revolution in learning, teaching and practical considerations of communicative action as proposed by Longer, Golton and Goff's Collaborative Analysis of Student Learning (CASL) (2003). In a teacher training system, such models help educators develop a culture of collaborative inquiry and gain a deeper understanding of the link between their instructor and their students' learning around a target learning area.

In this study, senior students of a faculty of education attending various departments of it were the main actors. We gave various new concepts to student teachers and asked them to work on them in pairs and in groups to generate concept maps. We had such aims in our minds:

1. Are our senior students successful in concept mapping?
2. Are they familiar with such recent concepts and can they make connections among them successfully?
3. Did they gain awareness about the significance of such an innovative technique? Will they be a volunteer about using it in their future classes?
4. Will they gain inspiration about the importance of being innovative?

The reflections were hopeful. When they become teachers, it might be necessary to remind them of giving some of their time to use such samples to give inspiration and motivation to their own students. That helps teachers see that student's class work is not just something to be entered in the textbook; rather, it is an indicator of what a student understands about a particular concept or skill and how the student learns to think critically.

8.1 Some Recommendations

As experienced instructors and quality-focused lifelong learners, we are very well aware of the importance of learning through collaborative actions and also being innovative. Life passes soon, but the written works stay forever. As a result, all the teachers should feel and accept themselves as the future innovators and writers of what they do in their classrooms to carry their ideas to the future ages.

In the future, we are planning to publicize the "Concept mapping with İmece Circles" as the designers and practitioners of it not only in Turkish settings but also at international gatherings to make a comparison of the utility of the methodology. Even we aim at preparing the Handbook of such collaborative work since it is based on collaboration and concept mapping. We believe that future leaders will benefit a lot for philosophy, methodology and reflections of it. Furthermore, such innovative methods might also be used at various faculties like Engineering, Arts & Sciences, Economics, etc. very effectively. We wish all young trainees luck in their experimentation with this system and we encourage you to share your insights with others who will use it.

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